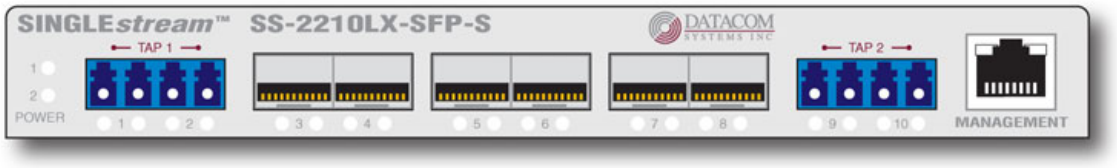
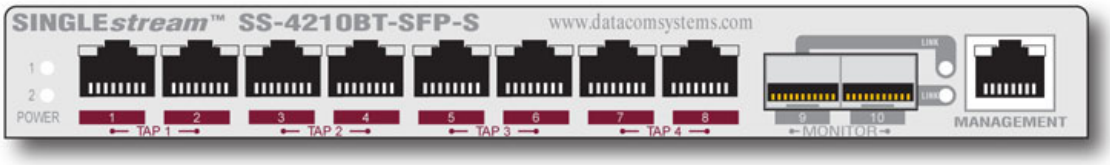
Datacom Systems Inc

Access Your Network™

SS-1200-S Series Link Aggregation Taps



SS-2200-S Series Dual-Link Aggregation Taps



SS-4200-S Series Quad-Link Aggregation Taps

SS-1200-S, SS-2200-S, SS-4200-S Series Link Aggregation Taps

USER*guide*

June 2012

541-0132-U-B.02

© 2012 Datacom Systems Inc

Product Description

Datacom Systems Inc. SINGLEstream™ SS-1200-S Series Link Aggregating Taps, the SS-2200-S Series Dual-Link Aggregating Taps and the SS-4200-S Series Quad-Link Aggregating Taps are made to be adaptable. The hard-wired TAP ports serve only as In-Line taps and the remaining Any-to-Any ports can be configured by the Command Line Interface (CLI) to be either input or output ports. The SINGLEstream™ Link, Dual-Link and Quad-Link Aggregating Taps combine or aggregate data streams, allowing any connected network device/tool to receive a full stream of data with one NIC.

The Datacom System SINGLEstream™ SS-1200-S Series Link Aggregating Taps, the SS-2200-S Series Dual-Link Aggregating Taps and the SS-4200-S Series Quad-Link Aggregating Taps support your ability to specifically apply your peripheral network tools to the analysis requirements and adapt with your ever-changing network.

SS-1200-S, SS-2200-S and SS-4200-S Series Link Aggregating Taps

© 2012 Datacom Systems Inc

All rights reserved. No parts of this work may be reproduced in any form or by any means - graphic, electronic, or mechanical, including photocopying, recording, taping, or information storage and retrieval systems - without the written permission of the publisher.

Products that are referred to in this document may be either trademarks and/or registered trademarks of the respective owners. The publisher and the author make no claim to these trademarks.

While every precaution has been taken in the preparation of this document, the publisher and the author assume no responsibility for errors or omissions, or for damages resulting from the use of information contained in this document or from the use of programs and source code that may accompany it. In no event shall the publisher and the author be liable for any loss of profit or any other commercial damage caused or alleged to have been caused directly or indirectly by this document.

Printed: June 2012 in East Syracuse, New York

Table of Contents

Section 1 Terms of Use 9

1 Copyright 9
2 License Agreement 9
3 Trademark Attribution 9
4 Proprietary Notice 9
5 Certifications and Marks 10
6 Safety Notices and Warnings 10

Section 2 Overview 11

1 LINKprotect™ 11
2 SINGLEstream™ Series Summary 11
3 What Shipped? 12
4 SINGLEstream™ Series Features and Benefits 12
5 SINGLEstream™ Series Common Specifications 13
6 SS-1200 Series Model Specific Specifications 14
7 SS-2200 Series Model Specific Specifications 14
8 SS-4200 Series Model Specific Specifications 15

Section 3 Hardware 17

1 SS-1200 Series Front Panels 17
2 SS-2200 Series Front Panels 18
3 SS-4200 Series Front Panels 18
4 Front Panel Description 19
- Power 19
- TAP Ports 19
- Any-to-Any Ports 20
- Management Port 21

5 Rear Panel Description 21
- Serial DB9 22
- Power Switch (SFP series) 22
- Rear Label (BT series) 22
- Rear Labeling (SFP series) 22
- Input Power 22

Section 4 Initial Configuration 23

1 Command Line Interface (CLI) 23
- Basic Functionality 23
- Password Recovery 24
- Basic Commands (Read Only Access) 24
  - EXIT (EX) 24
  - HELP (HE) or (?) 24
  - POWER STATUS (PO ST) 25
  - SHOW (SH) 26

© 2012 Datacom Systems Inc

SHOW GROUPS (SH GR) 27
SHOW MANAGEMENT (SH MA) 27
SHOW PORT CONFIG (SH PO CO) 28
SHOW PORT ROUTING (SH PO RO) 30
SHOW PRODUCT (SH PR) 30
SHOW TIME (SH TI) 30
SHOW USERS (SH US) 31
Superuser Commands (Configuration Access) **31**
SU (SU) 31
SU SET PASSWORD (SU SE PA) 31
SET PROMPT (SE PR) 31
ADD USER (AD US) 32
EDIT USER (ED US) 32
DELETE USER (DE US) 32
SET DATE (SE DA) 32
SET TIME (SE TI) 33
SET IP (SE IP), SUBNET (SU), GATEWAY (GA) 33
SET SUBNET (SE SU) 33
SET GATEWAY (SE GA) 34
SET PORT GROUP (SE PO GR) 34
SET PORT MONITOR (SE PO MO) 34
SET PORT NAME (SE PO NA) 35
SET PORT SPEED (SE PO SP) 35
SET PORT VTAG (SE PO VT) 35
SET LINK PROTECT (SE LP) 36
SET TCP PORT (SE TC PO) 37
SET UPGRADE (SE UP) 37
SET TELNET (SE TT) 37
SET SSH (SE SH) 38
SET SSH KEY (SE SH KY) 38
SET PING (SE PI) 38
SET SNMPv3 (SE V3) 39
SET SNMPv3 SUPERUSER (SE V3 SU) 39
2 SERIAL Port Configuration (DB9) **40**
HyperTerminal **40**
3 MANAGEMENT Port Configuration (RJ45) **40**
HyperTerminal **41**
TELNET **41**
4 IP Address Configuration **42**
IP Address Configuration with HyperTerminal **42**
IP Address Configuration with TELNET **46**
5 Exercise - CLI Setting Ports **50**
6 Management Connection (RJ45) **53**
TELNET **54**
SSH **55**
7 SNMP Configuration **57**
8 Small Form-Factor Plug Module **58**
Intallation Prerequisites **58**
Safety Guidelines **58**
Installing the SFP Module **59**
Removing the SFP Module **59**

© 2012 Datacom Systems Inc

Section 5 Hardware Installation 61
1 TAP Connection ... 61
Copper SS-1200BT-S and SS-2200BT-S series ... 61
Fiber Optic SS-1200LX-S and SS-1200SX-S series ... 62
2 Power ... 63
3 Any-to-Any Connection ... 63
4 Management Connection ... 64
Section 6 Functional Drawing 65
1 SS-1200-S Series ... 65
2 SS-2200-S Series ... 67
3 SS-4200-S Series ... 68
Section 7 Application 69
1 SS-1200 Series ... 69
Utilization less than 50 percent (HyperTerminal configuration example) ... 69
Utilization greater than 50 percent (Telnet configuration example) ... 72
2 SS-2200 Series ... 75
Tapping the Firewall (Telnet configuration example) ... 75
Section 8 Customer Service 79
1 Internet ... 79
2 Warranty ... 79
3 Limits of Liability ... 79
Section 9 Appendix A - Agent Capabilities MIB 81
Section 10 Appendix B - Power Supply MIB 89
Section 11 Appendix C - Structure of Management Information MIB 103
Section 12 Appendix D - FLASHutils 109

© 2012 Datacom Systems Inc

1 Terms of Use

The following terms and conditions relate to the use of this document. Please note that Datacom Systems Inc. reserves the right, at its entire discretion, to change, modify, add, or remove portions of these Terms of Use at any time. Please read the Terms of Use carefully as your use of this document is subject to the Terms of Use stipulated herein.

1.1 Copyright

Copyright© 2011 by Datacom Systems, Inc. All rights reserved. Printed in the United States of America. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of Datacom Systems, Inc. To obtain this permission, write to the attention of the Datacom Systems legal department at 9 Adler Drive, East Syracuse, New York 13057-1290, or call +1 315-463-9541.

1.2 License Agreement

Notice To All Users: By using Datacom Systems, Inc. products, you agree to the terms set forth. No licenses, express or implied, are granted with respect to the technology described and Datacom Systems, Inc. retains all rights with respect to the technology described herein. If applicable, you may return the product to the place of purchase for a full refund.

1.3 Trademark Attribution

Access Your Network™, DS3 ACTIVE*tap*™, DS3*switch*™, ETHERNET*tap*™, Empowering Network Professionals™, FDDI*switch*™, FIBER*splitter*™, FIBER*switch*™, FIBERSWITCH-*system*™, FLOW*control*™, GIGABIT*switch*™, INSERT*switch*™, INSERT*unit*™, LAN*switch*™, LINK*protect*™, MAN*Agents*™, MULTINET*switch*™, NET*span*™, PERMA*link*™, PRO*line*™, RMON SWITCHING*analyzer*™, SINGLE*stream*™, UNIVERSAL*switch*™, VERSA*stream*™, and WAN*switch*™ are trademarks of Datacom Systems, Inc. 1ST in Switching Solutions®, DATACOM*systems*®, LAN*clipper*®, MANA*gents*®, and MULTI*view*® are registered trademarks of Datacom Systems, Inc. All other registered and unregistered trademarks are the sole property of their respective owners. All specifications may be changed without notice.

1.4 Proprietary Notice

This document contains proprietary information about the SS-1200-S, SS-2200-S and SS-4200 family of products and is not to be disclosed or used except as authorized by written contract with Datacom Systems, Inc.

1.5 Certifications and Marks

CAUTION: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

The CE logo indicates that this equipment was tested and found to meet radiated and conducted emission to the European Community EMC Directive 89/336/EEC requirements as per EN 61000-6-3:2001, the generic emissions standard for residential, commercial and light industrial devices, the limits are those for an EN 55022 Class A product.

This equipment also has been tested and found to meet the immunity levels for residential, commercial and light industrial devices according to EN 61000-6-1:2001, the interference severity levels to the standards and requirements of EN 61000-3-2 Harmonic Current, EN 61000-3-3 Voltage Fluctuations and Flicker, EN 61000-4-2 Electrostatic Discharge, EN 610004-3 Radiated Susceptibility, EN 61000-4-4 Electrical Fast Transient/Burst, EN 61000-4-5 Surge and EN 61000-4-6 Conducted Susceptibility.

This equipment completed the Product Safety Review and meets the Low Voltage Directive 98/68/EEC requirements to the standards of EN 60950 Safety of Information Technology Equipment.

The RoHS compliant logo indicates that this electronic product does not exceed the limit requirements of toxic, hazardous substances or elements as set forth in Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

The crossed out wheelie bin logo signifies that the product can be recycled after being discarded, and should not be casually discarded as set forth in Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003 on waste electrical and electronic equipment (WEEE).

1.6 Safety Notices and Warnings

These explanatory labels are included in this information for the user in accordance with the requirements of IEC 60825.1.

WARNING: Class 1 laser and LED product. A class 1 laser is safe under all conditions of normal use. Invisible laser radiation may be emitted from optical port openings when no fiber cable is connected, avoid exposure to laser radiation and do not stare into open optical ports.

© 2012 Datacom Systems Inc

2 Overview

The SINGLE*stream*™ family of products increases network visibility and leverages your investment in network analyzers, probes, and security equipment by allowing you to simultaneously monitor as many supported configurable ports as you may need to fit your peripheral network tools. Greater visibility accelerates problem resolution, reduces downtime and increases enterprise productivity.

The SINGLE*stream*™ family of products are compatible with all vendor hardware and can be controlled by our Command Line Interface (CLI) software which allows you control with a single interface regardless of what network appliances you choose to deploy.

This User Guide addresses the SINGLE*stream*™ family which includes the SS-1200-S, SS-2200-S and SS-4200-S series of products with specific models within each series.

2.1 LINKprotect™

Many traditional taps prevent the operation of redundant routing and fail over systems because they keep both sides of the network invisible to the other. The built-in LINK*protect*™ feature eliminates this point of network failure by continuously monitoring both sides of the tapped network for link status. If one side of the tap loses link status, LINK*protect*™ will close the other side of the link, so routers and switches can engage protocols to bypass the failed link.

LINK*protect*™ will also keep monitoring both sides of the link until repaired, where it can then automatically re-establish the primary link. Timers (polling and recovery) and link re-establishment settings (manual or auto) are all user configurable on both sides of the link and provide a level of convenience and flexibility not previously available in copper Gigabit taps.

2.2 SINGLEstream™ Series Summary

The SINGLE*stream*™ Link Aggregation Taps provide a superior solution for 24x7 monitoring of full-duplex Ethernet links. Traditional Ethernet taps enable full-duplex monitoring of all traffic on a network segment, but they transmit the data to the network tools (e.g. analyzers, IDSs, probes) in two separate half-duplex streams. This not only requires each network tool to have two network interface cards (NIC), but also requires that the tool be capable of combining and processing both streams of data in order to monitor both sides of the conversation. Not all network tools have that capability. The SINGLE*stream*™ Series faultlessly combine the two data streams, allowing any connected network device/tool to receive a full-duplex stream of data with one NIC.

Additionally, the SINGLE*stream*™ Series provide a unique feature to help manage network resources - multiple input/output ports or Any-to-Any ports. With extra Any-to-Any ports, more network tools (such as analyzers and intrusion detection devices) can receive the same full-duplex transmission, so there will never be contention for access to the network segment. Also, these ports can be configured as more input ports to include more network segments for monitoring.

The SINGLE*stream*™ Series are adaptable with hard-wired In-Line taps and Any-to-Any ports which can be configured with the Command Line Interface (CLI) to be used as input or output portsto fit your needs and adapt with your ever-changing network.

© 2012 Datacom Systems Inc

2.3 What Shipped?

SS-1200-S Series Link Aggregation Taps

1 — Model: SS-1200-S series Link Aggregation Tap
2 — Switching AC Adapters
2 — AC Line Cords
1 — DRL512-2M-R serial cable, DB9 M/F straight thru

SS-2200-S Series Dual-Link Aggregation Taps

1 — Model: SS-2200-S series Dual-Link Aggregation Tap
2 — Switching AC Adapters
2 — AC Line Cords
1 — DRL512-2M-R serial cable, DB9 M/F straight thru

SS-4200-S Series Quad-Link Aggregation Taps

1 — Model: SS-4200-S series Quad-Link Aggregation Tap
2 — Switching AC Adapters
2 — AC Line Cords
1 — DRL512-2M-R serial cable, DB9 M/F straight thru

2.4 SINGLEstream™ Series Features and Benefits

- Connect any protocol analyzers, probes, or intrusion detection systems for permanent In-Line monitoring of full-duplex links — eliminates the need for network connectors to be disconnected and connected each time a segment needs to be monitored.
- Secure Shell (SSH) allows data to be exchanged using a secure channel between two networked devices.
- Simple Network Management Protocol (SNMP) protocol for managing devices on IP networks.
- LINK*protect*™, proven industry leading, non-intrusive, fault-tolerant, transparent to the network – will not interfere with data.
- Support full-duplex and half-duplex.
- Multiple input/output or Any-to-Any ports allow more network devices or tools to simultaneously monitor the same link, providing extended security and analysis options, while eliminating contention for network access. Also, these ports can be configured as more input ports to include more networks segments for monitoring.
- Redundant power ensures uninterrupted monitoring by eliminating power as a single point of failure — you get seamless monitoring even if the main power source is unavailable.
- Easy to install – optional rack mount available in 2 unit rack mount chassis (RMC-2) 1U high.

© 2012 Datacom Systems Inc

- Installed Management RJ45 port and Serial DB9 port allow for complete configuration through a simple, easy to use Command Line Interface (CLI).
- Datacom Customer Service Support is available via:
  Phone: +1 315 463-9541
  Website: www.datacomsystems.com

2.5 SINGLEstream™ Series Common Specifications

Management Port (front): RJ45 @ 100 Mbps Full-Duplex

The factory configured IP Address, Subnet Mask and Default Gateway are as follows:

IP Address: 192.168.1.1
Subnet Mask: 255.255.0.0
Default Gateway: 192.168.1.0

Fiber Tap Split Ratio and Insertion Loss (front): 50/50 — 4dB/4dB

Serial Port (rear): DB9

Power Requirement: Two external power adapters
Input: 100 - 240VAC 50 - 60Hz, 0.4-0.2 A — **Output**: 5VDC, 2.5A
Certified : CE, UL, CUL, CSA, TUV, CCC, PSE, JET, EU RoHS and China RoHS

Power Consumption: 12W

BTU/h: 40.9

Operating Temperature: 32º to 104° F — 0º to 40° C

Storage Temperature: -22º to 149° F — -30º to 65° C

Operating Range Relative Humidity: 5 to 90% non-condensing

Dimensions (H x W x D): includes RMC-2 rack mount bracket
1.750 x 7.950 x 7.775 inch
4.44 x 20.19 x 19.75 cm

Weight: 1.5 lbs; shipping: 6.5 lbs — 0.68 kg; shipping; 2.95 kg

© 2012 Datacom Systems Inc

2.6 SS-1200 Series Model Specific Specifications

SS-1204BT-BT-S:
Tap Connection: 1 - 10/100/1000BaseT In-Line (RJ45 Connectors)
Any-to-Any Ports: 2 - 10/100/1000BaseT (RJ45 Connectors)

SS-1204BT-SFP-S:
Tap Connection: 1 - 10/100/1000BaseT In-Line (RJ45 Connectors)
Any-to-Any Ports: 2 - SFP*

SS-1204LX-BT-S:
Tap Connection: 1 - 1000LX fiber In-Line (LC Connectors)
Any-to-Any Ports: 2 - 10/100/1000BaseT (RJ45 Connectors)

SS-1204LX-SFP-S:
Tap Connection: 1 - 1000LX fiber In-Line (LC Connectors)
Any-to-Any Ports: 2 - SFP*

SS-1204SX-BT-S:
Tap Connection: 1 - 1000SX fiber In-Line (LC Connectors)
Any-to-Any Ports: 2 - 10/100/1000BaseT (RJ45 Connectors)

*SFP = Small Form Pluggable can be LX, SX or 1000Mbs copper
(Support Datacom supplied only)

IMPORTANT: All BT taps can be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

Note: Tap Connection = 2 ports (TAP)

2.7 SS-2200 Series Model Specific Specifications

SS-2206BT-BT-S:
Tap Connections: 2 - 10/100/1000BaseT In-Line (RJ45 Connectors)
Any-to-Any Ports: 2 - 10/100/1000BaseT (RJ45 Connectors)

SS-2206SX-SFP-S:
Tap Connections: 2 - 1000SX fiber In-Line (LC Connectors)
Any-to-Any Ports: 2 - SFP*

SS-2210BT-SFP-S:
Tap Connections: 2 - 10/100/1000BaseT In-Line (RJ45 Connectors)
Any-to-Any Ports: 4 - 10/100/1000BaseT (RJ45 Connectors)
Any-to-Any Ports: 2 - SFP*

*SFP = Small Form Pluggable can be LX, SX or 1000Mbs copper
(Support Datacom supplied only)

IMPORTANT: All BT taps can be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

Note: Tap Connections = 4 ports (TAP 1 and TAP 2)

© 2012 Datacom Systems Inc

2.8 SS-4200 Series Model Specific Specifications

SS-4210BT-SFP-S:

Tap Connections: 4 - 10/100/1000BaseT In-Line (RJ45 Connectors)
Any-to-Any Ports: 2 - SFP*

*SFP = Small Form Pluggable can be LX, SX or 1000Mbs copper
(Support Datacom supplied only)

IMPORTANT: All BT taps can be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

Note: Tap Connections = 8 ports (TAP 1, TAP 2, TAP 3 and TAP 4)

© 2012 Datacom Systems Inc

3 Hardware

Front panel images of the SS-1200-S, the SS-2200-S and the SS-4200-S series are provided in this section.

3.1 SS-1200 Series Front Panels

SS-1204BT-BT-S

SS-1204BT-SFP-S

SS-1204LX-BT-S

SS-1204LX-SFP-S

SS-1204SX-BT-S

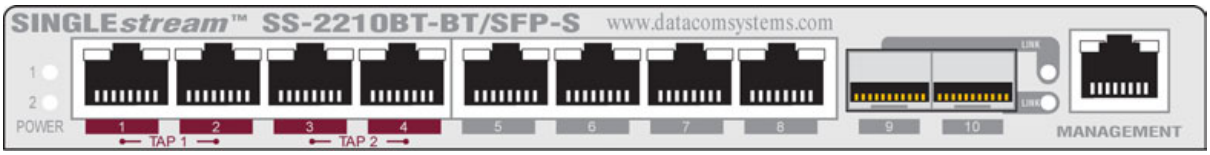
© 2012 Datacom Systems Inc

3.2 SS-2200 Series Front Panels

SS-2206BT-BT-S

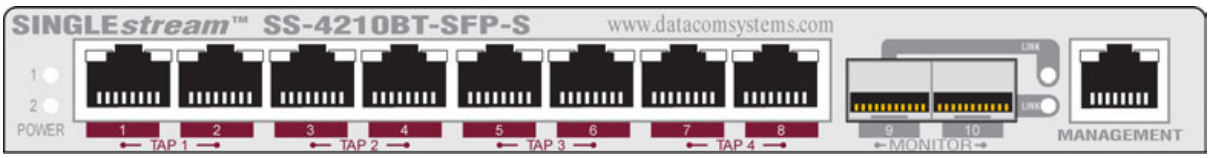
SS-2206SX-SFP-S

SS-2210BT-BT/SFP-S



3.3 SS-4200 Series Front Panels

SS-4210BT-SFP-S



© 2012 Datacom Systems Inc

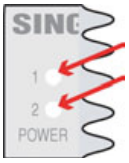
3.4 Front Panel Description

This section provides a illustration and description of the front panel of the SS-1200-S, SS-2200-S and SS-4200-S series.

An explanation of each front panel legend follows:

3.4.1 Power

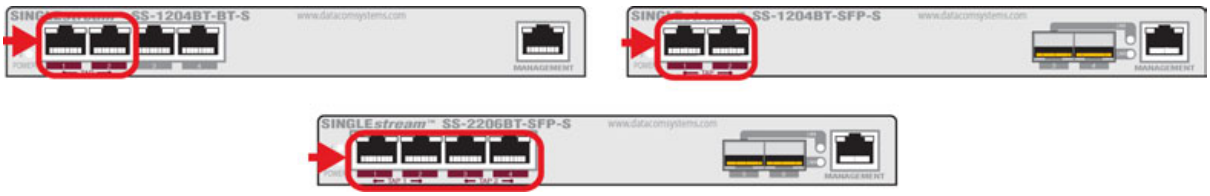
Two switching AC adapter power supplies are provided for each configurable unit. Although only one power supply is required to power the module, use of a second independent power source is strongly recommended to assure uninterrupted monitoring. Furthermore, connecting the second AC input power socket to a different external power source circuit than the first AC input power source eliminates power as a single point of failure. The power barrel sockets are located on the rear.



The **POWER 1** and **2** front panel LEDs illuminate green when power is available at both of the two rear power barrel sockets indicating power 1 and 2, respectively, are on. Either LED not illuminated indicates a defective power source and immediate investigation as to the cause is required to insure redundant power integrity.

3.4.2 TAP Ports

BT - TAP



BT - TAP (SS-1204BT-S port **1** and port **2**) or **TAP 1** and **TAP 2** (SS-2206BT-S port **1** and port **2**; port **3** and port **4)** or **TAP 1**, **TAP 2**, **TAP 3**, and **TAP 4** (SS-4210BT-S port **1** and port **2**; port **3** and port **4**; port **5** and port **6**; port **7** and port **8)** are RJ45 connectors used for connection to network segments. These jacks have integrated LEDs that display line status and line speed of each port. See the **TAP LED Display Code** table for LED display codes.

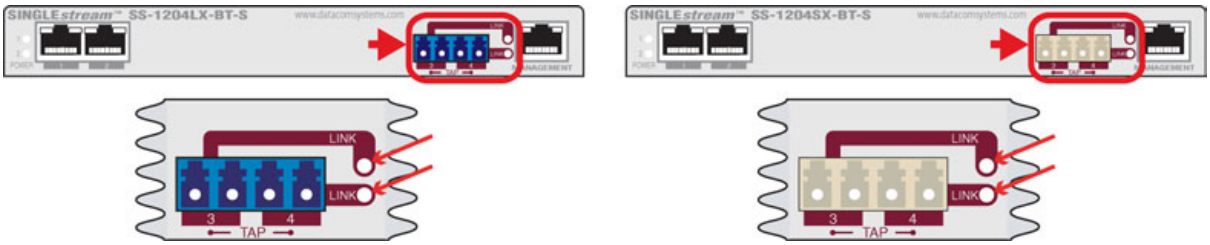
IMPORTANT: All BT taps can be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

TAP LED Display Code

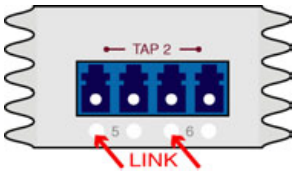
Code	Left LED		Right LED	Code
Link	Solid Green		Green	1,000 Mbs
Data	Flashing Green		Orange	100 Mbs
		(with Left Link or Data) ←	Off	10 Mbs

© 2012 Datacom Systems Inc

LX-BT/SX-BT - TAP (SS-1204LX-BT-S and SX-BT-S port **3** and port **4**) are dual-duplex LC connectors for connection to network segments. The LEDs to the right of the dual-duplex LC connectors are solid green when a light level link has been detected by the respective **TAP** Rx port.



LX-SFP/SX-SFP - TAP (SS-1204LX-SFP-S and port **1** and port **2**) or **TAP 1** (SS-2206SX-SFP-S port **1** and port **2)** and **TAP 2** (SS2206-SX-SFP-S port **5** and port **6)** are dual-duplex LC connectors for connection to network segments. The left LEDs below the dual-duplex LC connectors are solid green when a light level link has been detected by the respective **TAP** Rx port. The right LEDs solid green indicates 1,000 Mbs link speed.



3.4.3 Any-to-Any Ports

Superuser assigned **INPUT** or **OUTPUT** ports. See Serial and Management Port - Command Line Interface - Superuser Commands - 'SET PORT MONITOR (SE 34
Ports: **1** to **2** (SS-1204LX-BT-S or SS-1204SX-BT-S):
Ports: **3** to **4** (SS-1204BT-BT-S):
Ports: **5** to **6** (SS-2206BT-BT-S):
Ports: **5** to **8** (SS-2210BT-BT-S):

are RJ45 connectors used for connection to network devices or tools. These jacks have integrated LEDs that display line status and line speed of each port. See the **Any-to-Any RJ-45 LED Display Code** table for LED display codes.

Any-to-Any RJ-45 LED Display Code

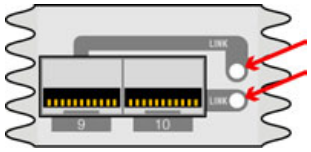
Code	Left LED		Right LED	Code
Link	Solid Green		Green	1,000 Mbs
Data	Flashing Green		Orange	100 Mbs
	(with Left Link or Data) ←		Off	10 Mbs

Ports: **3** to **4** (SS-1204BT-SFP-S, SS-1204LX-SFP-S and SX-SFP-S, SS-2206SX-SFP-S):
Ports: **9** to **10** (SS-2210BT-SFP-S):
Ports: **9** to **10** (SS-4210BT-SFP):

are sockets used with a small form-factor plug (SFP) module for connection to network devices or tools. They can be connected through fiber or copper, or a mix of each.

© 2012 Datacom Systems Inc

LX-BT/SX-BT - The LEDs located to the right of the SFP connectors are solid green indicating a link has been detected between the respective Any-to-Any Rx port and network device/tool Tx port or network segment. The LEDs are flashing green when data is passed.



LX-SFP/SX-SFP - The LED located below and slightly left of center of the SFP connectors are solid green indicating a link has been detected between the respective Any-to-Any Rx port and network device/tool Tx port or network segment. The LED flashes green when data is passed. The LED located below and slightly right of center of the SFP connectors indicates the line speed of each port. See the **Any-to-Any SFP LED Display Code** table for LED display codes.

Any-to-Any SFP Display Code			
Code	**Left LED**	**Right LED**	**Code**
Link	Solid Green	Green	1,000 Mbs
		Orange	100 Mbs
(with Left Link) ←		Off	10 Mbs

3.4.4 Management Port

The **MANAGEMENT PORT** is an RJ45 socket used for 100 Mbs full-duplex connection with a straight-through LAN cable via your management LAN to a Remote Management Console which is a standard PC using any Telnet terminal emulation application.

Management Port LED Display Code			
Code	**Left LED**	**Right LED**	**Code**
Link	Solid Green	Flashing Green	Data

Link indicates connection. The LED Display Code table deciphers the RJ45 jacks with integrated LEDs that display line status of the **MANAGEMENT PORT**.

3.5 Rear Panel Description

This section provides a description of the rear panel of the SS-1200-S, SS-2200-S and SS-4200-S series.

Either:

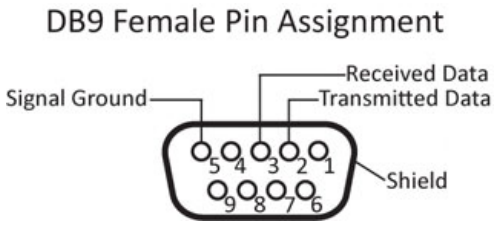
or

An explanation of each rear panel legend follows:

© 2012 Datacom Systems Inc

3.5.1 Serial DB9

The **SERIAL** connector port is a shielded DB9 Female and is cabled to the **COM** port of any compatible network tool or PC where terminal emulation software resides. The cable is a parallel straight-through cable (EIA232 Standard, DRL512-2M-R serial cable, DB9 M/F straight thru) with no cross-overs or self-connects in the connector hoods. The **SERIAL** connector port is the only port that can easily connect the Management PC to set the IP address (default 192.168.1.1) for the first time. This drawing shows the DB9 Female Pin Assignment:



3.5.2 Power Switch (SFP series)

The front panel **POWER 1**, **POWER 2** LEDs are illuminated green, respectively, when the DC power switch is depressed **ON** and DC power is available at both the two rear DC power sockets. Either **POWER 1**, **POWER 2** LED illuminated red indicates a defective power source and immediate investigation as to the cause is required to insure redundant power integrity.

3.5.3 Rear Label (BT series)

Identifiers for DB9, Serial Number (SN), Media Access Control (MAC) address, certification compliance, input power requirements and various other information is provided.

3.5.4 Rear Labeling (SFP series)

Identifiers for Serial Number (SN), Media Access Control (MAC) address, certification compliance, input power requirements and various other information is provided.

3.5.5 Input Power

Two DC input power sockets are provided on the rear panel. The front panel **POWER 1** and **2** LEDs are illuminated green, respectively:

- (SFP series) - when the DC **POWER** switch is depressed **ON** and DC power is available at both the two rear DC power sockets; or
- (BT series) - when DC power is available at both the two rear DC power sockets.

Either **POWER 1** or **2** LED not illuminated when powered, indicates a defective power source and immediate investigation as to the cause is required to insure redundant power integrity.

Although only one switching AC adapter power supply is required to power the configurable unit, use of a second independent power source is strongly recommended to assure uninterrupted monitoring. Furthermore, connecting the second DC input power socket to a different external power source circuit than the first DC input power source eliminates power as a single point of failure.

© 2012 Datacom Systems Inc

4 Initial Configuration

IMPORTANT: ***Prior to initial configuration of the hardware, it is imperative to review the entire Initial Configuration section before proceeding to the Installation section.***

NOTE: HyperTerminal is the preferred terminal emulation program and Microsoft© DOS-Windows Telenet is the preferred Telnet client.

This section explains the considerations and requirements for the initial configuration of the SS-1200-S, SS-2200-S and SS-4200-S series by a Command Line Interface (CLI) with a management PC using a terminal emulation application connected either through the **SERIAL** DB9 port or though the **MANAGEMENT** RJ45 port. Only one configuration session can be open at a time.

4.1 Command Line Interface (CLI)

The Command Line Interface (CLI) is used to:

- set IP address (default 192.168.1.1), Subnet Mask (default 255.255.0.0) and Default Gateway (default 192.168.1.0)
- set port speed and duplex
- enables the user to select which ports or groups of ports receive the data stream copies
- allows Any-to-Any ports to be configured as either inputs or outputs.

The factory default for all Any-to-Any ports on all aggregation taps (SS-1200-S, SS-2200-S and SS-4200-S series) ***are turned off by default - i.e. they are not set up as either inputs or outputs and are not replicated to any other ports with the exception of the hard-wired in-line taps.***

It is strongly recommended that the entire Initial Configuration section be reviewed before proceeding with installation.

4.1.1 Basic Functionality

Window Size Functionality: The CLI window has a limited number of character spaces available (24 lines per screen, 80 characters per line). If more data than can fit is presented, the number of lines is one less and a "—more—" prompt is shown on the last line.

Character Handling: Printable characters (ASCII codes 32-126) and non-printable codes noted below:

Non-Printable Character	Description
• <enter key>	Executes command; places command in history buffer
• <backspace key>	Erases previous character entry; removes history buffer entry

Connectivity/Authentication Functionality: Connectivity to the configurable product is made through the Management RJ45 or Serial DB9 port and authentication is required. This password protection yields read-only access. To make configuration changes, Superuser (SU) mode must be accessed with another password. See the 'Superuser Commands 31' section for more information.

© 2012 Datacom Systems Inc

Base Prompt: This is the text presented to the user logging in to use the CLI (default values shown). All Usernames and passwords are case-sensitive.

Enter Username: Administrator
Enter Password: admin
>

Superuser log in:

Example: > SU
Enter Password: password
#

4.1.2 Password Recovery

Password Recovery is provided for a user that has forgotten the Superuser and/or Administrator login password. Password recovery is accomplished by connecting to the unit serially using a HyperTerminal like program and rebooting the unit. As the power-up sequence is occurring, depress <Control> <C> and a text recovery key will be generated and displayed prior to the prompt. This key is used to reset the passwords. An example recovery key prompt is: 617A6185774$

You must call Datacom Service Center with this recovery key in order to obtain the required response to reset passwords. Given a valid reset response, the ***factory default*** passwords will be saved in Non-Volatile memory. If an invalid response is given, a new recovery key will be calculated and displayed at the prompt, as described above, after first clearing the screen.

4.1.3 Basic Commands (Read Only Access)

The following section shows the long form of the basic command set with the shortcut for the command noted in parenthesis. All commands, either the exact long form or the shortcut form, are entered after the prompt (default >) at the cursor. No auto-fill mode is available. After a brief command overview, each function is followed by an example (**Example:** >) command input.

4.1.3.1 EXIT (EX)

This command use will exit the CLI shell as shown:

> EXIT (EX)

Example:
> EX

Connection to host lost.

Press any key to continue . . .

4.1.3.2 HELP (HE) or (?)

When this command is entered, a list of commands, their shortcut inputs, and their descriptions will display. For the use and application of each command, refer to the individual command description within this section. The HELP command displays the available commands depending upon the specific product and not in ascending order as shown:

© 2012 Datacom Systems Inc

Example: > ?
Available commands:

ADD USER	AD US	Add User
DELETE USER	DE US	Delete User
EDIT USER	ED US	Change Username/Password
EXIT	EX	Exit Shell
HELP	HE / ?	Show Help
POWER STATUS	PO ST	Show Power Supply Status
SET DATE	SE DA	Set System Date
SET GATEWAY	SE GA	Set Default Gateway
SET IP	SE IP	Set IP [subnet mask] [default gateway]
SET LINK PROTECT	SE LP	Set Link Protect parameters
SET PING	SE PI	Set Ping ON or OFF
SET PORT GROUP	SE PO GR	Set Group Name
SET PORT MONITOR	SE PO MO	Set Monitor Configuration
SET PORT NAME	SE PO NA	Set Port Name (max 32 bytes)
SET PORT SPEED	SE PO SP	Set Port Speed
SET PORT VTAG	SE PO VT	Set Port VTAG Stripping
SET PORT VTAP	SE PO VP	Set Port VTAP
SET PROMPT	SE PR	Set Command Prompt (max 32 bytes)
SET SNMPv3	SE V3	Set SNMP ON or OFF
SET SNMPv3 SUPERUSER	SE V3 SU	Set SNMP SuperUser Parameters
SET SSH	SE SH	Set SSH ON or OFF
SET SSH KEY	SE SH KY	Set SSH Key
SET SUBNET	SE SU	Set Subnet Mask nnn.nnn.nnn.nnn
SET TCP PORT	SE TC PO	Set TCP Port
SET TELNET	SE TE	Set Telnet ON or OFF
SET TIME	SE TI	Set System Time
SET UPGRADE	SE UP	Set Upgrade ON or OFF
SHOW	SH	Show All Current Configurable Values
SHOW GROUPS	SH GR	Show Group Configuration
SHOW MANAGEMENT	SH MA	Show Management Configuration
SHOW PORT CONFIG	SH PO CO	Show Port Configuration
SHOW PORT ROUTING	SH PO RO	Display Routing Summary
SHOW PRODUCT	SH PR	Show Product Name and Serial Number
SHOW TIME	SH TI	Show System Date and Time
SHOW USERS	SH US	Display Users
SU	SU	Enter Superuser Mode
SU SET PASSWORD	SU SE PA	Set Superuser Password

4.1.3.3 POWER STATUS (PO ST)

This command displays power supply status. It is entered and displays data as shown:

> POWER STATUS (PO ST)

Example: > PO ST

Power Supply 1: Good
Power Supply 2: Good
>

© 2012 Datacom Systems Inc

4.1.3.4 SHOW (SH)

Using this command alone, displays general information about the product as shown:

> SHOW (SH)

Example:

```
> SH
        Date/Time:              02-24-2011 16:38:31
        Product:                SS-4210BT-SFP-S
        Serial Number:          9326023
        Version:                5.3.1.4
        Security Version        1.0.0.14
        MAC Address:            00-14-e2-00-10-d3
        IP Address:             192.168.1.1
        IP Subnet:              255.255.0.0
        IP Default Gateway:     192.168.1.0
        IP Port:                2370
        FlashUtils protocol:    enabled
        Telnet protocol:        enabled
        SSH protocol:           enabled
        Ping protocol:          enabled
        SNMPv3 protocol:        enabled
        TAP 1:
                1: t1-p1
                2: t1-p2
        TAP 2:
                1: t2-p1
                2: t2-p2
        TAP 3:
                1: t3-p1
                2: t3-p2
        TAP 4:
                1: t4-p1
                2: t4-p2

>
```

The following SHOW commands, with other qualifiers, displays more specific information:

© 2012 Datacom Systems Inc

4.1.3.5 SHOW GROUPS (SH GR)

This command displays all ports as designated by the administrator (Superuser) as belonging to the same logical group. Specifically, groups can be configured as if they were a single logical port, enabling a high degree of control during both the initial setup and all subsequent moves or changes.

The GROUP NAME followed by the ports included in the group are displayed. It is entered and displays data as shown:

> SHOW GROUPS (SH GR)

Example:

```
> SH GR
        TAP 1:
                1: t1-p1
                2: t1-p2
        TAP 2:
                1: t2-p1
                2: t2-p2
        TAP 3:
                1: t3-p1
                2: t3-p2
        TAP 4:
                1: t4-p1
                2: t4-p2
>
```

4.1.3.6 SHOW MANAGEMENT (SH MA)

This command displays Management RJ45 port information and authentication information. It is entered and displays data as shown:

> SHOW MANAGEMENT (SH MA)

Example:

```
> SH MA
        Security Version:       1.0.0.12
        MAC Address:            00-14-e2-00-10-d3
        IP Address:             192.168.1.1
        IP Subnet:              255.255.0.0
        IP Default Gateway:     192.168.1.0
        IP Port:                2370
        FlashUtils protocol:    enabled
        Telnet protocol:        enabled
        SSH protocol:           enabled
        Ping protocol:          enabled
        SNMPv3 protocol:        enabled
>
```

© 2012 Datacom Systems Inc

4.1.3.7 SHOW PORT CONFIG (SH PO CO)

This command displays all configurable related data for all ports. It is entered and displays data as shown:

> SHOW PORT CONFIG (SH PO CO)

Example:

```
> SH PO CO

01: t1-p1
      CFG: Auto Negotiate     Current: No Link
      LinkProtect OFF
      Type: Tap (1..2)
      Group Member:   TAP 1
      Copies to: 2
      VLAN TAG Stripping: OFF
02: t1-p2
      CFG: Auto Negotiate     Current: No Link
      LinkProtect OFF
      Type: Tap (2..1)
      Group Member:   TAP 1
      Copies to: 1
      VLAN TAG Stripping: OFF
03: t2-p1
      CFG: Auto Negotiate     Current: No Link
      LinkProtect OFF
      Type: Tap (3..4)
      Group Member:   TAP 2
      Copies to: 4
      VLAN TAG Stripping: OFF
04: t2-p2
      CFG: Auto Negotiate     Current: No Link
      LinkProtect OFF
      Type: Tap (4..3)
      Group Member:   TAP 2
      Copies to: 3
      VLAN TAG Stripping: OFF
05: t3-p1
      CFG: Auto Negotiate     Current: No Link
      LinkProtect OFF
      Type: Tap (5..6)
      Group Member:   TAP 3
      Copies to: 6
      VLAN TAG Stripping: OFF
06: t3-p2
```

© 2012 Datacom Systems Inc

```
        CFG: Auto Negotiate     Current: No Link
        LinkProtect OFF
        Type: Tap (6..5)
        Group Member:   TAP 3
        Copies to: 5
        VLAN TAG Stripping: OFF
07: t4-p1
        CFG: Auto Negotiate     Current: No Link
        LinkProtect OFF
        Type: Tap (7..8)
        Group Member:   TAP 4
        Copies to: 8
        VLAN TAG Stripping: OFF
08: t4-p2
        CFG: Auto Negotiate     Current: No Link
        LinkProtect OFF
        Type: Tap (8..7)
        Group Member:   TAP 4
        Copies to: 7
        VLAN TAG Stripping: OFF
09: Mon1
        CFG: Auto Negotiate     Current: 1G Full Duplex
        Type: Span
        Group Member:
        Copies to:
        VLAN TAG Stripping: OFF
10: Mon2
        CFG: Auto Negotiate     Current: 1G Full Duplex
        Type: Span
        Group Member:
        Copies to:
        VLAN TAG Stripping: OFF
>
```

© 2012 Datacom Systems Inc

4.1.3.8 SHOW PORT ROUTING (SH PO RO)

This command displays, as a quick check, a port routing interface matrix for all ports in a brief summary format. It is entered and displays, in this example, a stand-alone SS-4210BT-SFP-S data as shown:

> SHOW PORT ROUTING (SH PO RO)

Example:

```
> SH PO RO
                    Outputs
     01   02   03   04   05   06   07   08   09   10
01 --------X-----------------------------------------
02 ---X-----------------------------------------------
03 -------------------X-------------------------------
04 --------------X------------------------------------
05 ------------------------------X-------------------
06 ------------------------X--------------------------
07 ----------------------------------------X----------
08 ----------------------------------X---------------
09 -------------------------------------------------
10 -------------------------------------------------

>
```

4.1.3.9 SHOW PRODUCT (SH PR)

This command displays the name, serial number, and firmware version of the product. It is entered and displays data as shown:

> SHOW PRODUCT (SH PR)

Example:

```
> SH PR
        Product:        SS-4210BT-SFP-S
        Serial Number:  9326023
        Version:        5.3.1.2
```

4.1.3.10 SHOW TIME (SH TI)

This command displays the set date and time for the product, it is entered as shown:

> SHOW TIME (SH TI)

Example:

```
> SH TI
        Date/Time    10-09-2007 12:40:25
```

© 2012 Datacom Systems Inc

4.1.3.11 SHOW USERS (SH US)

Displays all users for the configurable product. The response asterisk indicates the connected user.

SHOW USERS (SH US)

Example: # SH US
* Administrator
username

4.1.4 Superuser Commands (Configuration Access)

The following section shows the long form of the Superuser command with the shortcut for the command noted in parenthesis. A brief overview of the command display function is given followed by an example (Example: #) command input. All commands, either the exact long form of the command or the shortcut form of the command, are entered after the prompt (default #) at the cursor. No auto-fill mode is available.

4.1.4.1 SU (SU)

This command accesses the Superuser mode where the product can be configured. A password prompt is displayed and the default password is "password." Then the Superuser prompt is displayed except the prompt has turned from ">" to "#," as shown below:

> SU (SU)
Enter Password: ********
#

4.1.4.2 SU SET PASSWORD (SU SE PA)

Change the password used to access Superuser mode. It is entered as shown:

SU SET PASSWORD (SU SE PA)

Example: # SU SE PA

Warning

Modification of the SU password has serious consequences if the password is lost!!
Warning

Enter Password: ********
Confirm Password: ********
#

4.1.4.3 SET PROMPT (SE PR)

This command, followed by a text string, changes the Base Prompt to the text value entered (up to 32 characters). It is entered as shown:

SET PROMPT (SE PR) prompt text

Example: # SE PR Datacom
Datacom#

© 2012 Datacom Systems Inc

4.1.4.4 ADD USER (AD US)

Add users, it is entered as shown:

ADD USER (AD US)

Example:

```
# AD US
Enter New Username: username
Enter Password: ****
Confirm Password: ****
        username has been saved.
#
```

4.1.4.5 EDIT USER (ED US)

Re-enter or edit Usernames/Passwords as shown:

EDIT USER (ED US) username

Example:

```
# ED US newuser
Enter New Username: username
Enter Password: ****
Confirm Password: ****
        User username has been saved
#
```

4.1.4.6 DELETE USER (DE US)

Delete users, it is entered as shown:

DELETE USER (DE US) username

Example:

```
# DE US username
        User "username" deleted
#
```

4.1.4.7 SET DATE (SE DA)

This command sets the real time clock date. It is entered as shown:

SET DATE (MMDDYY)

Example:

```
# SE DA 011311
#
```

© 2012 Datacom Systems Inc

4.1.4.8 SET TIME (SE TI)

This command, followed by the time (HHMMSS), sets the real time clock time. It is entered as shown:

SET TIME (HHMMSS)

Example: # SE TI 033526
#

4.1.4.9 SET IP (SE IP), SUBNET (SU), GATEWAY (GA)

This command configures the IP address (default 192.168.1.1) parameter. Initially this should be done using the serial port with a terminal application. The parameter is entered as shown:

SET IP (SE IP) [IP Address nnn.nnn.nnn.nnn]

Example 1:
SE IP 172.169.50.134
IP will be updated at end of session.
#
Or, the parameters can also be entered jointly, (i.e., IP Address [default 192.168.1.1], Subnet Mask [default 255.255.0.0], Default Gateway [default 192.168.1.0]) but entry must be in the proper sequence order and separated by a space delimiter, as shown:

SET IP [SUBNET] [GATEWAY] nnn.nnn.nnn.nnn nnn.nnn.nnn.nnn nnn.nnn.nnn.nnn
^ ^
space space

Example 2:
SE IP 172.169.50.134 255.255.0.0 172.169.50.1
IP will be updated at end of session.
Subnet Mask will be updated at end of session.
Default Gateway will be updated at end of session.
#

4.1.4.10 SET SUBNET (SE SU)

This command configures the Subnet Mask (default 255.255.0.0) parameter. Initially this should be done using the serial port with a terminal application. The parameter is entered as shown:

SET SUBNET (SE SU) [nnn.nnn.nnn.nnn]

Example:
SE GA 172.169.50.1
Subnet Mask will be updated at end of session.
#

© 2012 Datacom Systems Inc

4.1.4.11 SET GATEWAY (SE GA)

This command configures the Gateway (default 192.168.1.0) parameter. Initially this should be done using the serial port with a terminal application. The parameter is entered as shown:

SET GATEWAY (SE GA) [nnn.nnn.nnn.nnn]

Example:
SE GA 172.169.50.1
Default Gateway will be updated at end of session.
#

4.1.4.12 SET PORT GROUP (SE PO GR)

Create a port list under a common name for ease of use. When displayed, the common name is all caps, regardless of case entry. As part of this command, there is a command separator (CONTAINS) or, if the OFF parameter (delete the group) is used, the CONTAINS is not used. A maximum of 10 groups is allowed.

NOTE: PORT GROUP is shown within the SHOW GROUPS (SH GR) or the SHOW PORT CONFIG (SH PO CO) display.

Groups as designated by the administrator (Superuser) belong to the same logical group. Specifically, groups can be configured as if they were a single logical port, enabling a high degree of control during both the initial setup and all subsequent moves or changes. It is entered as shown:

SET PORT GROUP (SE PO GR) name [OFF] or [CONTAINS] port list

Example:
SE PO GR Monitor 1 CONTAINS 9,10
#

4.1.4.13 SET PORT MONITOR (SE PO MO)

This command sets the data routing by selecting the port (output) on which the monitoring device is to be located as well as ports (input TAPS, SPAN) to be redirected to that monitor port. As part of this command, there is a command separator (FROM) or, if the OFF parameter (turn off all data routing to the selected port) is used, the FROM is not used.

NOTE: PORT MONITOR is shown within the SHOW PORT CONFIG (SH PO CO) or the SHOW PORT ROUTING (SH PO RO) display.

It is entered as shown:

SET PORT MONITOR (SE PO MO) comma separated list of port numbers, port names or group names [OFF] or [FROM comma separated list of port numbers, port names or group names]

Example 1:
SE PO MO Port1 FROM Engineering
#

© 2012 Datacom Systems Inc

Example 2:
SE PO MO 4 FROM 3,2,PortNine
#

Example 3:
SE PO MO 3 OFF
#

NOTE: ***See the 'Exercise - CLI Setting Ports 50' and 'Application 69' sections for further explanation and examples using input and output settings for tap and Any-to-Any ports.***

4.1.4.14 SET PORT NAME (SE PO NA)

This command, followed by the port number or port name, a command separator (TO), then the name text (up to 32 characters), assigns the new name text entered.

NOTE: PORT NAME is shown within the SHOW PORT CONFIG (SH PO CO) display.

It is entered as shown:

SET PORT NAME (SE PO NA) port number or port name TO name text

Example:
SE PO NA 4 TO Port 4
#

4.1.4.15 SET PORT SPEED (SE PO SP)

This command changes the port speed for a single port or a group of ports.

NOTE: PORT SPEED is shown within the SHOW PORT CONFIG (SH PO CO) display.

It is entered as shown:

SET PORT SPEED (Comma separated list of Port numbers, port names, or group names) Speed duplex is one of the following: 10HALF, 10FULL, 100HALF, 100FULL, 1000FULL, AUTO.

Example:
SE PO SP 10 1000FULL
#

4.1.4.16 SET PORT VTAG (SE PO VT)

This command is used to change the capability of a port to either pass VLAN Tags or strip them from a frame and recalculate the CRC of the frame as shown:

SE PO VT (Comma separated list of port numbers, port names, or group names) ON/OFF

Example: # SE PO VT 1,4,6,7 ON
#

© 2012 Datacom Systems Inc

4.1.4.17 SET LINK PROTECT (SE LP)

This command configures the link protect function for the integrated tap.
SET LINK PROTECT (SE LP) tapnum enable int1 int2 recovery where:

tapnum	specific tap number (1 or 2)
enable	Link Protect ON/OFF
int1	fail polling interval 1-3600 secs
int2	recover polling interval 1-3600 secs
recovery	AUTO/MANUAL

NOTE: The status of LINK PROTECT is shown within the SHOW PORT CONFIG (SH PO CO) display.

Factory default is that link protect enable is ON, int1 and int2 is 10 seconds and recovery is AUTO. If one side of the network traffic, through the integrated tap, is interrupted ("LINK" dropped) for longer than 10 seconds, the tap will enter bypass mode and the other side of the network will also drop "LINK" with the integrated tap. The TAP will continue to auto recover, as heard when the bypass relays cycle at the polling interval rate, until link is established or the LINK PROTECT settings are changed to different values.

SET LINK PROTECT (SE LP) tapnum enable interval recovery

For example, for a SS-1210BT-BT/SFP, the parameters may be entered as shown:

Example:
SE LP 1 ON 30 30 AUTO
#

This example command sets the TAP 1 ports (ports 1 and 2) to enable link protect ON, the polling interval is set to 30 seconds and recovery is set to AUTO.

NOTE: Several common conditions could cause the LINK PROTECT function to initiate bypass mode:

- Prior to the installation of the integrated TAP in an active network; with the factory default LINK PROTECT settings; and when LINK is not established within the 10 second polling interval — the LINK PROTECT function will initiate bypass mode.
- If one side of the network link is interrupted for longer than the current polling interval — LINK PROTECT function will initiate bypass mode.

When recovery (AUTO/MANUAL) is set to MANUAL, the TAP will remain in bypass mode once network link is interrupted through the polling interval. LINK is re-established at the Command Line Interface (CLI) by re-executing the SET LINK PROTECT command. The bypass mode can also be reset and LINK re-established by power cycling the TAP.

© 2012 Datacom Systems Inc

4.1.4.18 SET TCP PORT (SE TC PO)

This command configures the TCP Port (default 2370) parameter. Initially this should be done using the serial port with a terminal application. The parameter is entered as shown:

SET TCP PORT (SE TC PO) [nnnnn]

Example:
SE TC PO 17216
TCP Port is now updated.
#

4.1.4.19 SET UPGRADE (SE UP)

This command sets the FLASHutils service (default ENABLED) process. It is entered as shown:

SET UPDATE (SE UP) [OFF or ON]

Example 1:
SE UP OFF
The FlashUtils protocol is now disabled.
#

Example 2:
SE UP ON
The FlashUtils protocol is now enabled.
#

4.1.4.20 SET TELNET (SE TT)

This command sets the TELNET service (default ENABLED) process. It is entered as shown:

SET TELNET (SE TT) [OFF or ON]

Example 1:
SE TT OFF
The Telnet protocol will be disabled at end of session.
#

Example 2:
SE TT ON
The Telnet protocol will be enabled at end of session.
#

© 2012 Datacom Systems Inc

4.1.4.21 SET SSH (SE SH)

This command sets the SSH service (default ENABLED) process. It is entered as shown:

SET SSH (SE SH) [OFF or ON]

Example 1:
SE SH OFF
The SSH protocol will be disabled at end of session.
#

Example 2:
> SE SH ON
The SSH protocol will be enabled at end of session.
#

4.1.4.22 SET SSH KEY (SE SH KY)

This command sets the SSH service (default ENABLED) process. It is entered as shown:

SET SSH KEY (SE SH KY) [RSA or DSA]
RSA and DSA are algorithms for public-private-key cryptography. Cut and paste the PEM (Privacy Enhanced Mail) encoded RSA or DSA key.

Example 1:
SE SH KY RSA
Please cut & paste the PEM encoded rsa SSH key . . . <--right mouse click if Putty or Terra Term
rsa SSH Key successfully loaded
#

Example 2:
> SE SH KY DSA
Please cut & paste the PEM encoded dsa SSH key . . . <--right mouse click if Putty or Terra Term
dsa SSH Key successfully loaded
#

4.1.4.23 SET PING (SE PI)

SET PING ENABLE (SE PI EN): This command enables or disables PING (default ENABLED) service process. It is entered as shown:

SET PING ENABLE (SE PI EN) [OFF or ON]

Example 1:
SE PI EN OFF
The PING protocol is now disabled.
#

Example 2:
SE PI EN ON
The PING protocol is now disabled.
#

© 2012 Datacom Systems Inc

4.1.4.24 SET SNMPv3 (SE V3)

This command sets the SNMP service (default ENABLED) process. It is entered as shown:

SET SNMPv3 (SE V3) [OFF or ON]

Example 1:
SE V3 OFF
The SNMP protocol is now disabled.
#

Example 2:
> SE V3 ON
The SNMP protocol is now enabled.
#

4.1.4.25 SET SNMPv3 SUPERUSER (SE V3 SU)

SET SNMPV3 SUPERUSER (SE V3 SU) name auth authPass priv privPass: This command is required to create an SNMP V3 user. There ***MUST*** be at least one SNMP user for the feature to work. It is entered as shown:

SET SNMPV3 SUPERUSER (SE V3 SU) name auth authPass priv privPass

where:

name	SNMP principal [maximum of 32 characters]
auth	MD5/SHA [authorization encryption type]
authPass	authorization password - at least 12 characters
priv	DES/AES [privilege encryption type]
privPass	privilege password - at least 12 characters

Example:
> SE V3 SU username MD5 12characters DES characters12

SNMP V3 user created

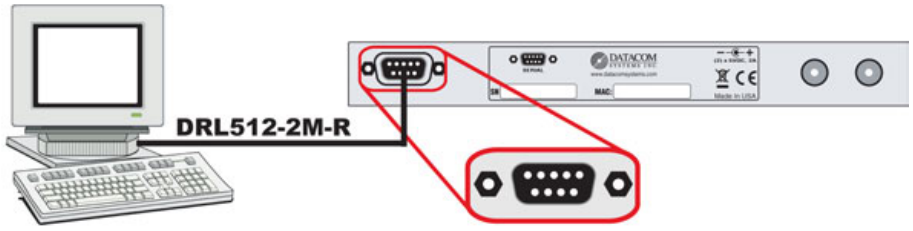
© 2012 Datacom Systems Inc

4.2 SERIAL Port Configuration (DB9)

Use of the **SERIAL** DB9 port, which is fairly simple and straight forward, is strongly recommended for initial configuration of the hardware.

4.2.1 HyperTerminal

NOTE: HyperTerminal is the preferred terminal emulation program.



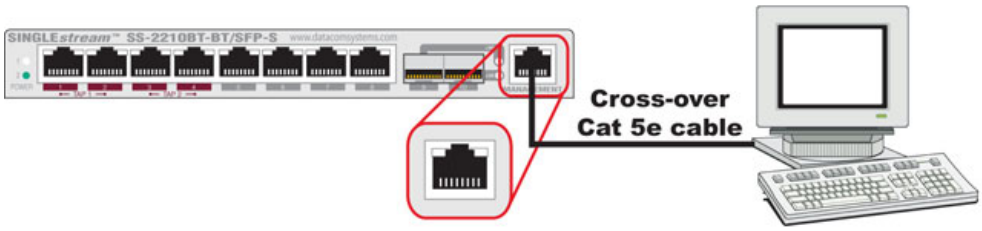
Any freely available terminal emulator may be utilized, but please note the specific HyperTerminal setup if using an alternate terminal emulator. Once connection is made to the **SERIAL** DB9 port, open the HyperTerminal connection with the following settings:

9600 bits per second
8 data bits
Parity none
1 stop bit
Flow control none

After completing review of the Command Line Interface (CLI) 23 and Exercise - CLI setting Ports 50 sections, IP Address configuration can be found in the IP Address Configuration 42 section.

4.3 MANAGEMENT Port Configuration (RJ45)

NOTE: HyperTerminal is the preferred terminal emulation program and Microsoft© DOS-Windows Telenet is the preferred Telnet client.



The factory configured IP Address, Subnet Mask and Default Gateway are as follows:

IP Address: 192.168.1.1
Subnet Mask: 255.255.0.0
Default Gateway: 192.168.1.0

© 2012 Datacom Systems Inc

4.3.1 HyperTerminal

NOTE: HyperTerminal is the preferred terminal emulation program.

Any freely available terminal emulator may be utilized, but please note the specific HyperTerminal setup if an alternate terminal emulator is used

IMPORTANT: For **Host Address,** if initial IP Address **HAS NOT BEEN** configured, use **192.168.1.1** (default) or if initial IP Address **HAS BEEN** configured, use the **Local Area Network** address input during initial IP Address configuration.

HyperTerminal (terminal emulator) enter:

TCP/IP (Winsock)
Host Address: nnn.nnn.nnn.nnn [i.e., 192.168.1.1 **or** Local Area Network]
Port Number: 23

Set HyperTerminal (terminal emulator) properties
Under File>Properties>Settings
Emulation: **VT100**
Under File>Properties>Settings>ASCII Setup
Check box: **Send line ends with line feeds**
Check box: **Echo typed characters locally**

After completing review of the Command Line Interface (CLI) 23 and Exercise - CLI setting Ports 50 sections, IP Address configuration can be found in the IP Address Configuration 42 section.

4.3.2 TELNET

NOTE: Microsoft© DOS-Windows Telenet is the preferred Telnet client.

Most network equipment and operating systems with a TCP/IP stack also support some kind of TELNET service server for remote configuration. Security-related shortcomings have limited TELNET (TErminaL NETwork) usage, although TELNET is still widely used when diagnosing problems, manually "talking" to other services without specialized client software, and administration of network elements such as integration and maintenance of core network elements.

IMPORTANT: For **hostname,** if initial IP Address **HAS NOT BEEN** configured, use **192.168.1.1** (default) or if initial IP Address **HAS BEEN** configured, use the **Local Area Network** address setting input during initial IP Address configuration.

TELNET using **MANAGEMENT** RJ45 - software configuration of the hardware

At the Windows command prompt enter:
telnet
At the Microsoft Telnet> prompt enter:
o nnn.nnn.nnn.nnn (open hostname) [i.e., o 192.168.1.1 **or** Local Area Network])

After completing review of the Command Line Interface (CLI) 23 and Exercise - CLI setting Ports 50 sections, IP Address configuration can be found in the IP Address Configuration 42 section.

© 2012 Datacom Systems Inc

4.4 IP Address Configuration

All SS-1200-S, SS-2200-S and SS-4200-S series are shipped with a ***factory default*** configuration as follows:

IP Address:192.168.1.1
Subnet Mask: 255.255.0.0
Default Gateway: 192.168.1.0

IMPORTANT: If you expect to remotely connect to the SS-1200-S, SS-2200-S or SS-4200-S series, you must change the IP Address, Subnet Mask and Default Gateway to match your Local Area Network as described in either the 'IP Address Configuration with HyperTerminal 42' or 'IP Address Configuration with TELNET 46' sections.

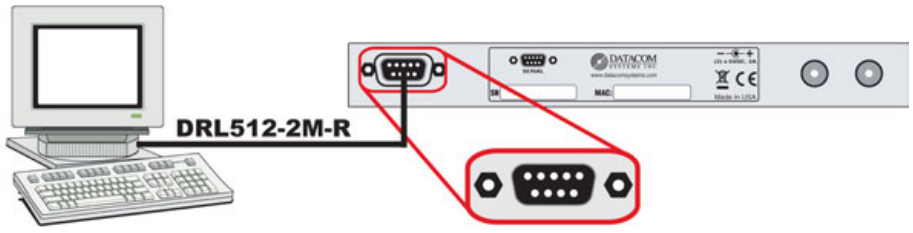
Note: If your SS-1200-S, SS-2200-S or SS-4200-S already has the IP Address, Subnet Mask and Default Gateway set for your network, you may proceed to the 'Small Form-Factor Plug Module 58' section.

4.4.1 IP Address Configuration with HyperTerminal

The IP address of the configurable series can be configured via a serial connection with either Microsoft's **HyperTerminal** application (available on most Windows PCs) or an open source free software terminal emulator for MS-Windows.

Step 1. Plug the SS-1200-S, SS-2200-S or SS-4200-S into an external power source using a supplied switching AC adapter and AC line cord. Note, **POWER 1** or **2** LED is illuminated green indicating power is available from the connected DC power socket. The other **POWER** LED is not illuminated, indicating a lack of power to the unconnected DC power socket.

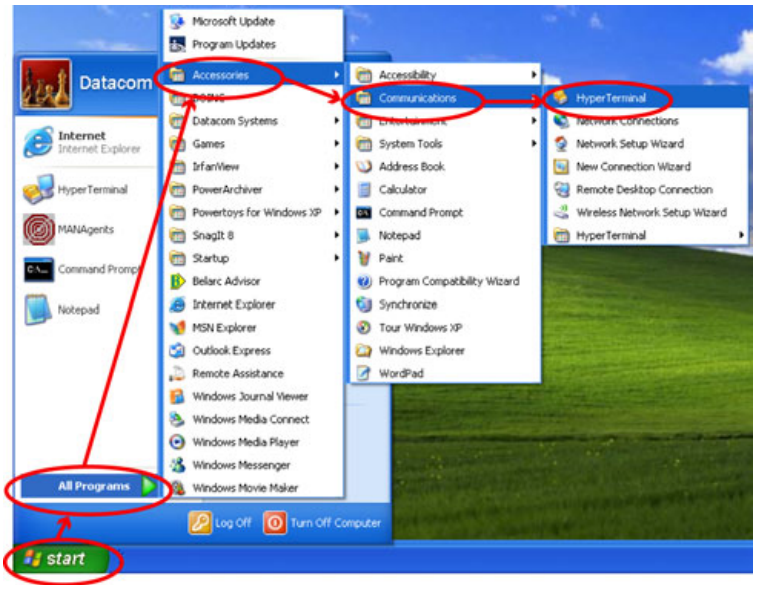
Step 2. Connect your PC and SS-1200-S, SS-2200-S or SS-4200 using the provided Datacom Systems DRL512-2M-R cable. Connect the DB9 Female pin end to the serial port on your PC and connect the DB9 Male pin to the **SERIAL** port on the unit.



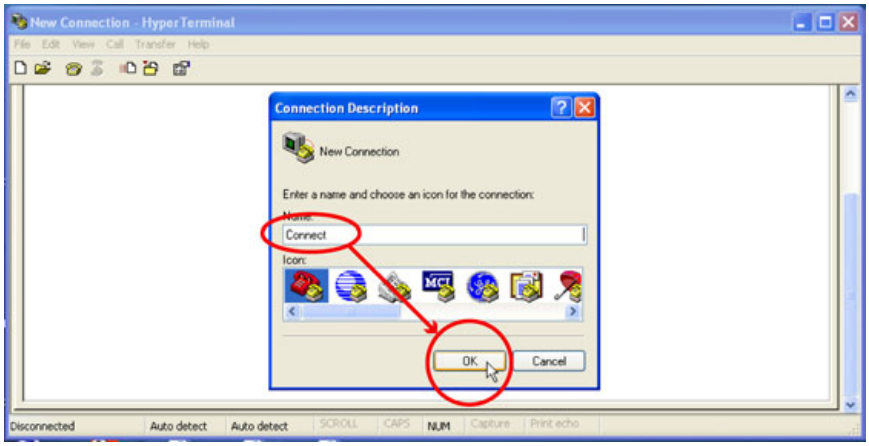
NOTE: For PCs without 9-pin serial ports, check with your product representative for available sources of a USB to RS-232 Plug-in Adapter.

© 2012 Datacom Systems Inc

Step 3. Open the HyperTerminal application on your PC by selecting **START > All Programs > Accessories > Communications > HyperTerminal**



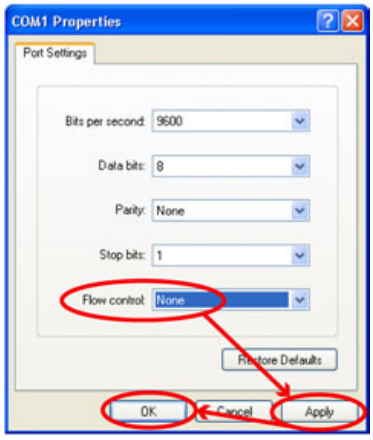
Step 4. Name a new HyperTerminal connection and select **OK**



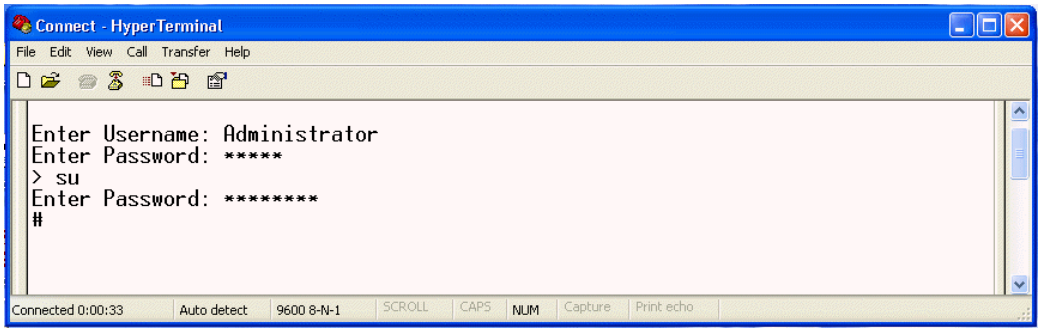
Step 5. On the **Connect to** window, create a serial link by selecting the **COM** port assigned to the serial port on your PC from the **Connect using:** pull-down menu and select **OK**

© 2012 Datacom Systems Inc

Step 6. Next, configure the **COM Properties**. The initial correct settings to communicate with the SS-1200-S, SS-2200-S or SS-4200-S series (9600, 8, None, 1, None) are shown below. Once all settings are configured correctly, click **Apply**, then click **OK**.



Step 7. You are now connected to your SS-1200-S, SS-2200 or SS-4200-S series. Hit the **Enter** key twice in succession (i.e., **Enter**, **Enter**) to display the **Enter Username:** prompt. All Usernames and passwords are case-sensitive. Type **Administrator** (default value) and press the **Enter** key. At the **Enter Password:** prompt, type **admin** (default value) and press the **Enter** key to display the command line **>** prompt. At the command line **>** prompt, type **su** and press the **Enter** key. At the **Enter Password:** prompt, type **password** (default value) and press the **Enter** key to display the command line **#** prompt. To see a list of available commands, at either the **>** or **#** command line prompt, type **?** and press the **Enter** key.

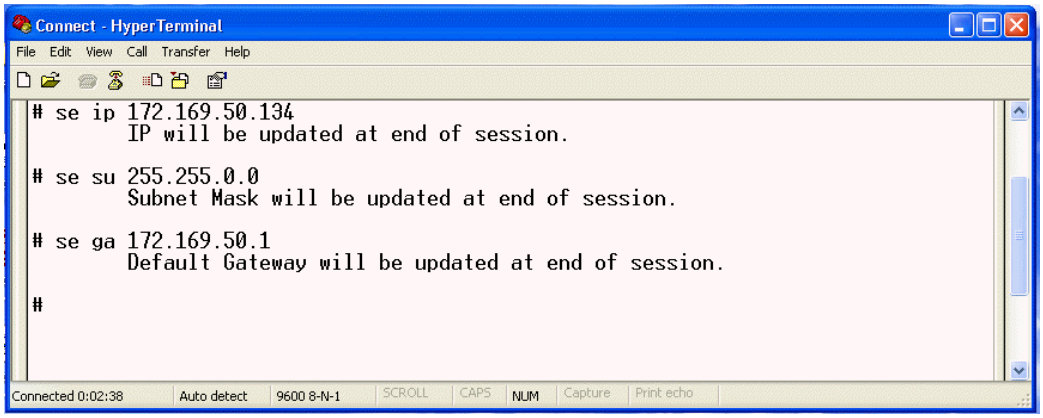


Step 8. SET IP (SE IP) by typing **se ip xxx.xxx.xxx.xxx** corresponding to a valid IP address for your network. Press the **Enter** key to continue.

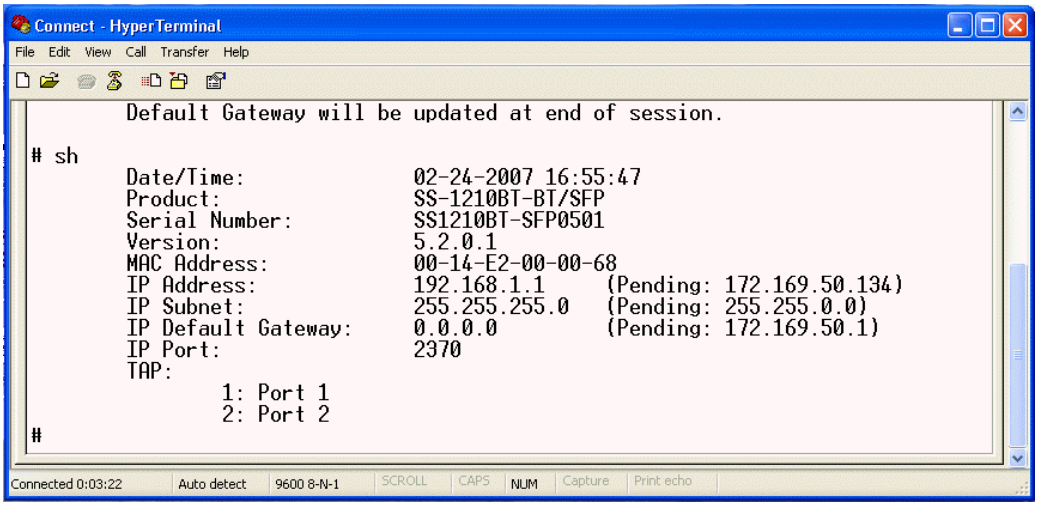
Step 9. SET SUBNET (SE SU) by typing **se su xxx.xxx.xxx.xxx** corresponding to your network's subnet mask. Press the **Enter** key to continue.

© 2012 Datacom Systems Inc

Step 10. SET GATEWAY (SE GA) (if needed) by typing **se ga xxx.xxx.xxx.xxx** corresponding to your network's default gateway. Press the **Enter** key to continue.


Connect - HyperTerminal
File Edit View Call Transfer Help
se ip 172.169.50.134
IP will be updated at end of session.
se su 255.255.0.0
Subnet Mask will be updated at end of session.
se ga 172.169.50.1
Default Gateway will be updated at end of session.
#
Connected 0:02:38 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

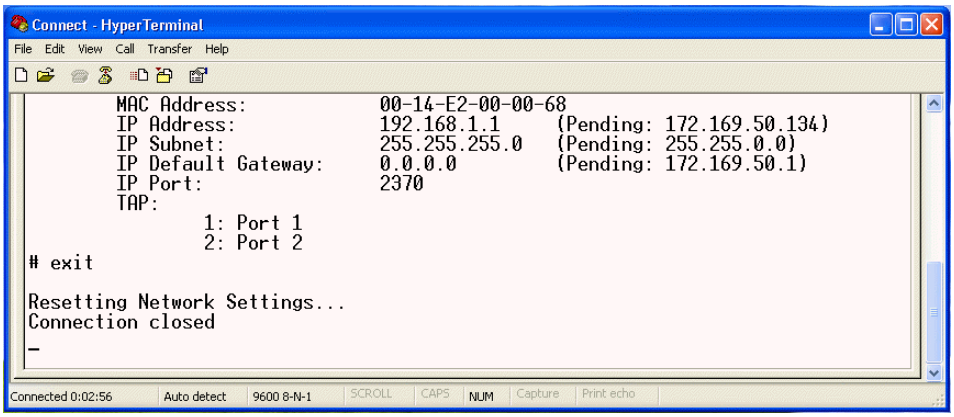
Step 11. SHOW (SH) by typing **sh** and press the **Enter** key to display and affirm that the pending IP Address, IP Subnet and IP Default Gateway match the intended Local Area Network input IP Address, IP Subnet and IP Default Gateway.


Connect - HyperTerminal
File Edit View Call Transfer Help
Default Gateway will be updated at end of session.
sh
Date/Time: 02-24-2007 16:55:47
Product: SS-1210BT-BT/SFP
Serial Number: SS1210BT-SFP0501
Version: 5.2.0.1
MAC Address: 00-14-E2-00-00-68
IP Address: 192.168.1.1 (Pending: 172.169.50.134)
IP Subnet: 255.255.255.0 (Pending: 255.255.0.0)
IP Default Gateway: 0.0.0.0 (Pending: 172.169.50.1)
IP Port: 2370
TAP:
1: Port 1
2: Port 2
#
Connected 0:03:22 Auto detect 9600 8-N-1 SCROLL CAPS NUM Capture Print echo

Step 12. If the pending IP Address is not correct, repeat **Step 8,** if the pending IP Subnet is not correct, repeat **Step 9** and if the pending IP Default Gateway is not correct, repeat **Step 10**. Repeat **Step 11** to review and verify that the pending IP Address, IP Subnet and IP Default Gateway match the intended Local Area Network input IP Address, IP Subnet and IP Default Gateway.

© 2012 Datacom Systems Inc

Step 13. Type **exit** to save the network address changes and press the **Enter** key to end the connection session indicated by 'Connection closed' response.



Step 14. Close HyperTerminal, disconnect the DRL512-2M-R serial cable and install the SS-1200-S series, SS-2200-S series or SS-4200-S series SINGLE*stream*™ in your chosen network location.

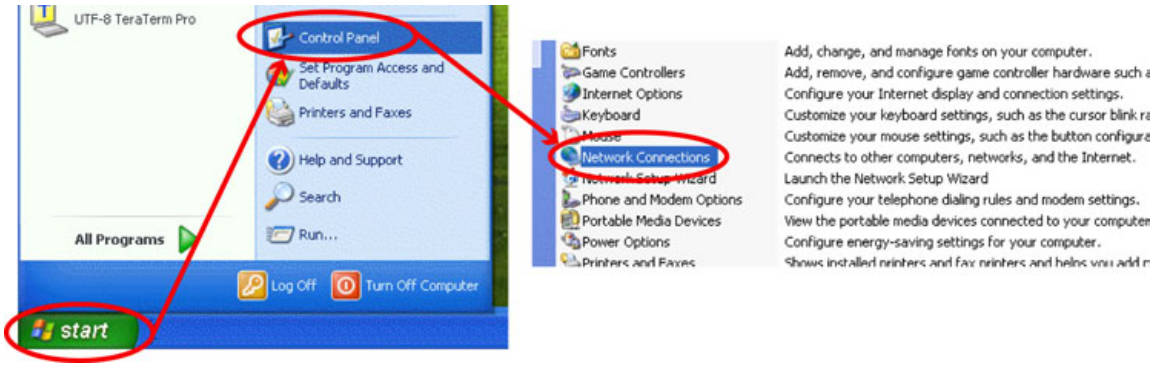
4.4.2 IP Address Configuration with TELNET

The IP address of the configurable series can be configured via a RJ45 connection with a **TELNET** application (available on most Windows PCs) or an open source free software terminal emulator for MS-Windows.

Step 1. Connect the SS-1200-S, SS-2200-S or SS-4200-S with one of the supplied switching AC adapters and AC line cords into an external power source. Either **POWER 1** or **2** LED illuminates green indicating power is available from the connected source. The other **POWER** LED is not illuminated, indicating a lack of power to the unconnected DC power socket.

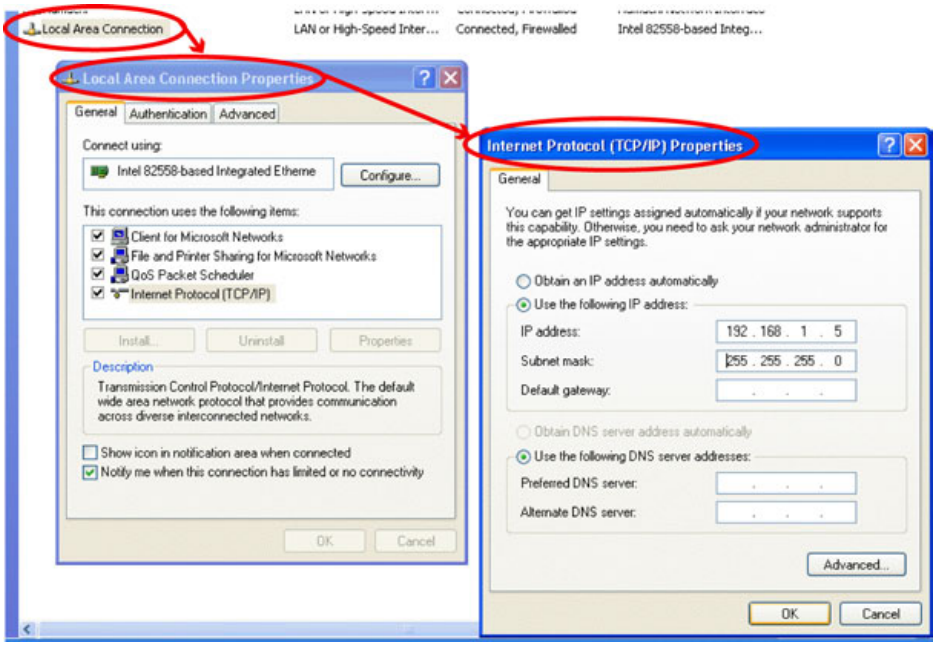
Step 2. Using a cross-over Cat 5e cable, connect one end to the SS-1200-S, SS-2200-S or SS-4200-S **MANAGEMENT** port and the other end to the RJ45 port on your management PC.

Step 3. Check the PC Local Area Network Connection by selecting **START > Settings > Control Panel > Network Connections**

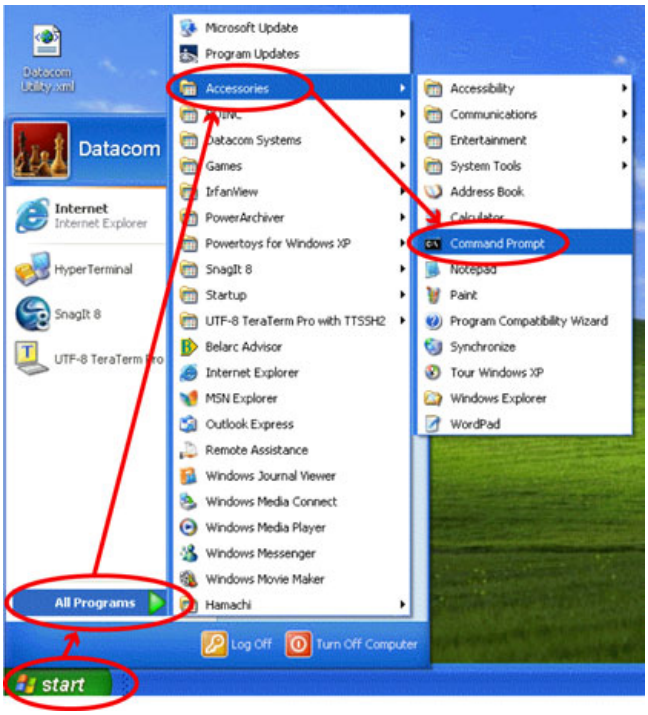

UTF-8 TeraTerm Pro
Control Panel
Set Program Access and Defaults
Printers and Faxes
Help and Support
Search
Run...
All Programs
Log Off
Turn Off Computer
start
Fonts
Add, change, and manage fonts on your computer.
Game Controllers
Internet Options
Configure your Internet display and connection settings.
Keyboard
Customize your keyboard settings, such as the cursor blink ra
Customize your mouse settings, such as the button configure
Network Connections
Connects to other computers, networks, and the Internet.
Launch the Network Setup Wizard
Phone and Modem Options
Configure your telephone dialing rules and modem settings.
Portable Media Devices
View the portable media devices connected to your computer
Power Options
Configure energy-saving settings for your computer.

© 2012 Datacom Systems Inc

Step 4. Right click **Local Area Connection** and from drop down menu select **Properties**. Highlight **Internet Protocol (TCP/IP)** and highlight and click **Properties** box. Check the button **Use the following IP Address:** Use IP Address: 192.168.1.5 and Subnet Mask: 255.255.255.0. Click **OK**.

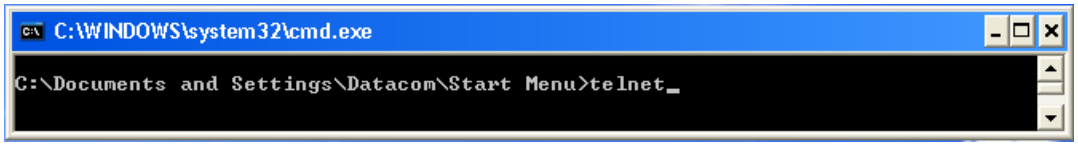

Local Area Connection
LAN or High-Speed Inter...
Connected, Firewalled
Intel 82558-based Integ...
Local Area Connection Properties
General
Authentication
Advanced
Connect using:
Intel 82558-based Integrated Etherne
Configure...
This connection uses the following items:
Client for Microsoft Networks
File and Printer Sharing for Microsoft Networks
QoS Packet Scheduler
Internet Protocol (TCP/IP)
Install...
Uninstall
Properties
Description
Transmission Control Protocol/Internet Protocol. The default wide area network protocol that provides communication across diverse interconnected networks.
Show icon in notification area when connected
Notify me when this connection has limited or no connectivity
OK
Cancel
Internet Protocol (TCP/IP) Properties
General
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
192 . 168 . 1 . 5
Subnet mask:
255 . 255 . 255 . 0
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

Step 5. Open the Command Prompt on your PC by selecting **START > All Programs > Accessories > Command Prompt**



© 2012 Datacom Systems Inc

Step 6. In the **Command Prompt** window, at the prompt, enter TELNET and hit the **Enter** key. (To see a list of available Microsoft Telnet Client Commands, at the prompt, enter ? and hit the **Enter** key. Supported commands will be displayed.)



Step 7. At the **Command Prompt** window prompt, enter o 192.168.1.1 and hit the **Enter** key.

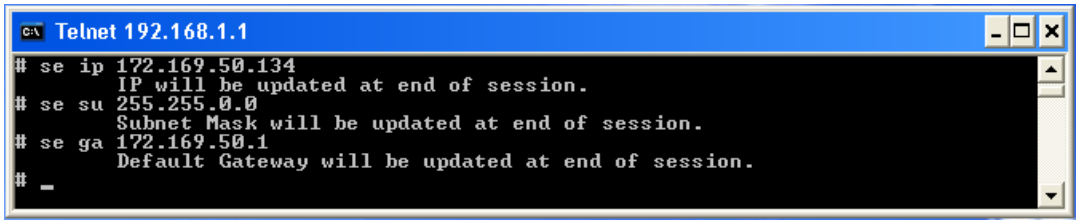
C:\WINDOWS\system32\cmd.exe - telnet
Welcome to Microsoft Telnet Client
Escape Character is 'CTRL+]'
Microsoft Telnet> o 192.168.1.1_

Step 8. You are now connected at the **Enter Username:** prompt. Usernames and passwords are case-sensitive. Type **Administrator** (default value) and press the **Enter** key. At the **Enter Password:** prompt, type **admin** (default value) and press the **Enter** key to display the command line **>** prompt. At the command line **>** prompt, type **su** and press the **Enter** key. At the **Enter Password:** prompt, type **password** (default value) and press the **Enter** key to display the command line **#** prompt. To see a list of available commands, at either the **>** or **#** command line prompt, type **?** and press the **Enter** key .

Step 9. SET IP (SE IP) by typing **se ip xxx.xxx.xxx.xxx** corresponding to a valid IP address for your network. Press the **Enter** key to continue.

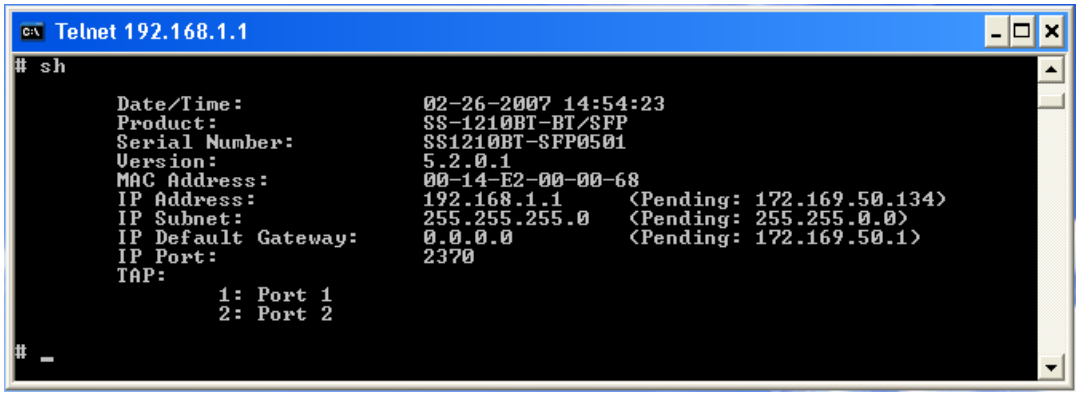
Step 10. SET SUBNET (SE SU) by typing **se su xxx.xxx.xxx.xxx** corresponding to your network's subnet mask. Press the **Enter** key to continue.

Step 11. SET GATEWAY (SE GA) (if needed) by typing **se ga xxx.xxx.xxx.xxx** corresponding to your network's default gateway. Press the **Enter** key to continue.


Telnet 192.168.1.1
se ip 172.169.50.134
IP will be updated at end of session.
se su 255.255.0.0
Subnet Mask will be updated at end of session.
se ga 172.169.50.1
Default Gateway will be updated at end of session.
_

© 2012 Datacom Systems Inc

Step 12. SHOW (SH) by typing **sh** and press the **Enter** key to display and affirm that the pending IP Address, IP Subnet and IP Default Gateway match the intended Local Area Network input IP Address, IP Subnet and IP Default Gateway.



Step 13. If the pending IP Address is not correct, repeat **Step 9,** if the pending IP Subnet is not correct, repeat **Step 10** and if the pending IP Default Gateway is not correct, repeat **Step 11**. Repeat **Step 12** to review and verify that the pending IP Address, IP Subnet and IP Default Gateway match the intended Local Area Network input IP Address, IP Subnet and IP Default Gateway.

Step 14. Type **exit** and press the **Enter** key to save the network address changes which ends the connection session as indicated in a few seconds by .the Windows informational message balloon pop-up icon "**Local Area Connection** - A network cable is unplugged."

Step 15. Close TELNET

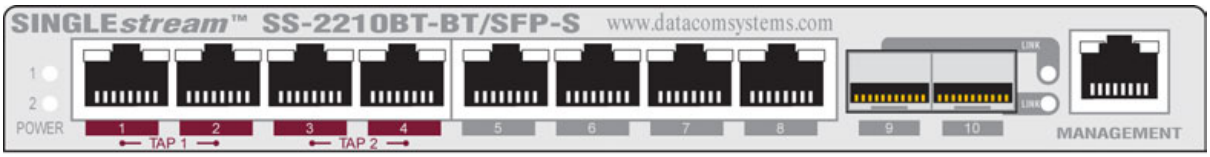
Step 16. Disconnect the DRL512-2M-R serial cable.

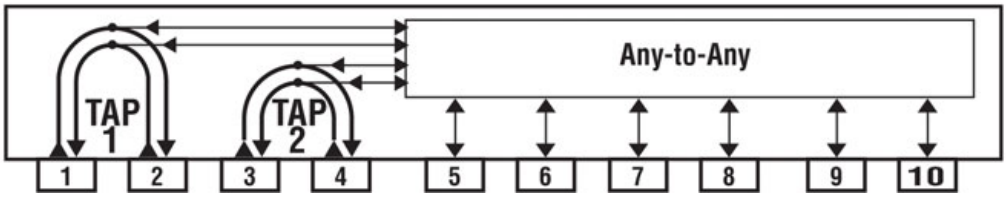
Step 17. Install the SS-1200-S, SS-2200-S or SS-4200-S series in your chosen network location.

© 2012 Datacom Systems Inc

4.5 Exercise - CLI Setting Ports

PREMISE: The configurable SINGLEstream™ series' allow multiple network devices/tools to receive the combined data of multiple Ethernet network segments. The SINGLEstream™ series has hard-wired in-line network taps. However, any of the remaining Any-to-Any ports can be configured as shown in this exercise and additional examples are shown in the 'Application SS-1200-S series 69 and SS-2200-S series 75 section.



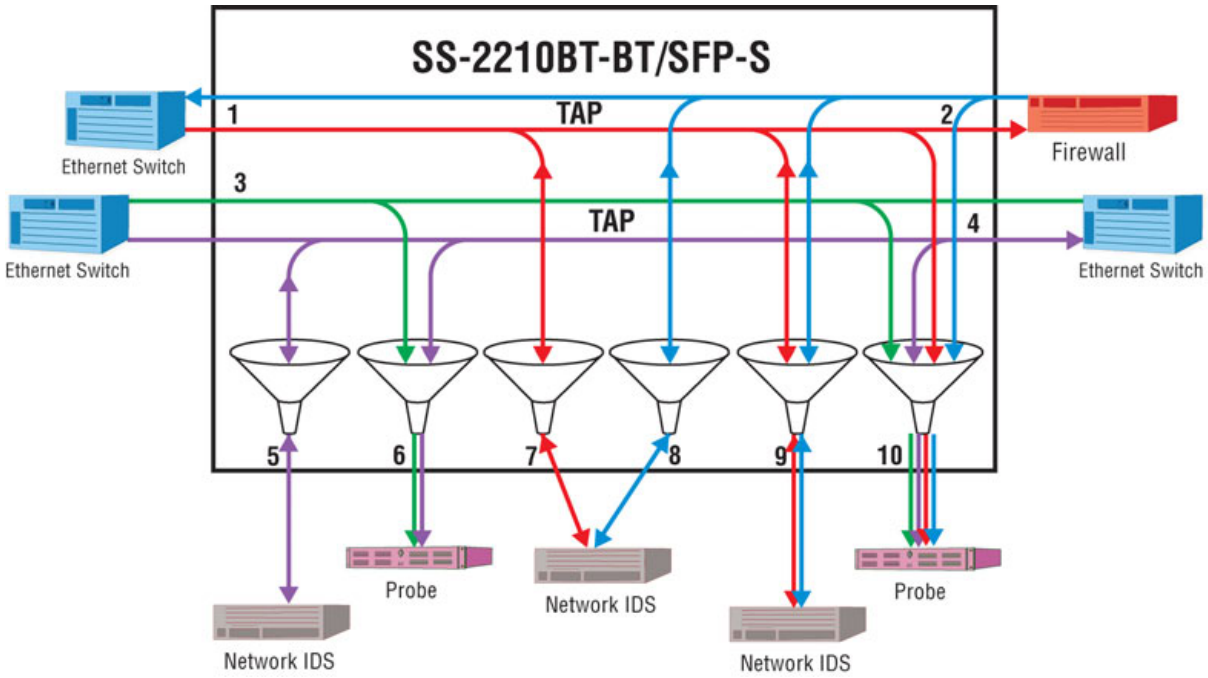


GOAL/SOLUTION: The exercise for the setup of a SS-1210BT-BT/SFP-S shown is as follows:

- Ports 1 and 2 are a hard-wired in-line tap.
- Ports 3 and 4 are a hard-wired in-line tap
- Port 5 has been setup to output data to a Network IDS from Port 4's input.
- Port 6 has been setup to output aggregated data to a Probe from Port 3 and 4's inputs.
- Port 7 has been setup to output data to a Network IDS from Port 1's input and returns TCP resets from the Network IDS.
- Port 8 has been setup to output data to a Network IDS from Port 2's input and returns TCP resets from the Network IDS.
- Port 9 has been setup to output aggregated data to a Network IDS from Port 1 and 2's inputs/ outputs and returns TCP resets from the Network IDS.
- Port 10 has been setup to output aggregated data to a Probe from Port 1, 2, 3, and 4's inputs.

NOTE: Port 9's Network IDS's network interface card (NIC) can handle both sides of the network conversation at once. Port 7 and 8's Network IDS's network interface cards cannot handle the whole conversation at once and must use two separate NICs for each side of the conversation. It can be setup either way to fit your network devices/tools' requirements.

© 2012 Datacom Systems Inc



CONFIGURATION: For the connections to be properly set, use the syntax below in the Command Line Interface (CLI) to setup Tap and Any-to-Any ports. As the IP address (default 192.168.1.1) is set during the 'Initial Configuration' it is not covered in this section, see the 'IP Address 42' section for those steps. The connections in this exercise are setup in the CLI as shown below (syntax is shown with either user > or Superuser # prompts):

For Initial Configuration, open HyperTerminal on your Management PC using the SS-1210BT-BT/SFP-S **SERIAL** DB9 port. Settings are found in the 'Initial Configuration', 'SERIAL Port Configuration (DB9)', 'HyperTerminal 40' section.

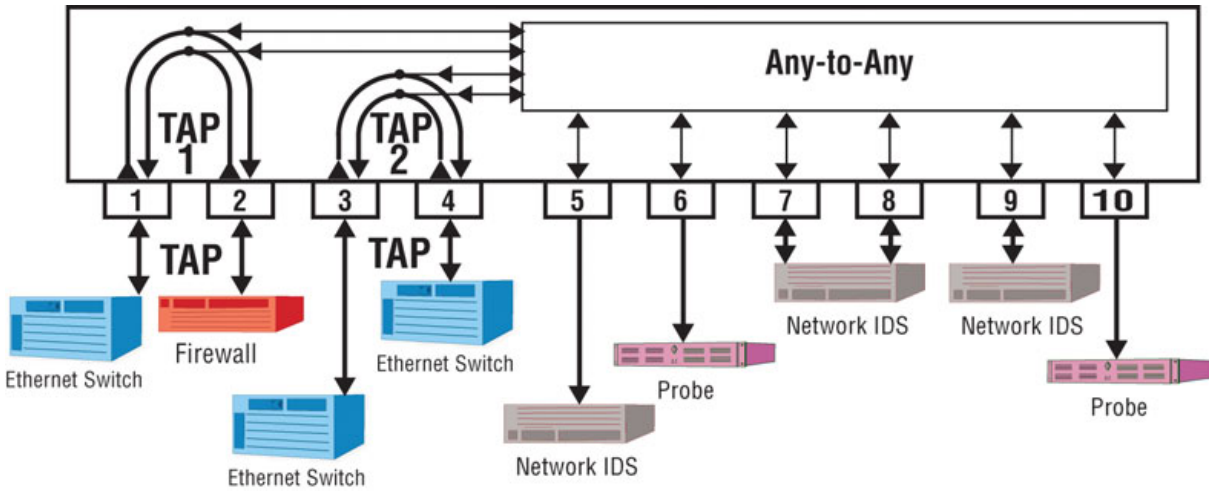
Press **Enter** key, **Enter** key, then enter your **Username** (default: Administrator), **Enter** key, **Password** (default: admin) and **Enter** key. Default prompt is the > symbol.

Then enter Superuser mode, at the user prompt >, enter **SU**, **Enter** key, and enter the **Password** (default: password) and **Enter** key. Default prompt is the # symbol.

In Superuser mode use the following syntax for the different connections. This syntax sets the input/output for Any-to-Any ports as well as the input/output for Tap ports.

The factory default for all aggregation taps (SS-1200-S series and SS-2200-S series) ***are turned off by default - i.e. they are not set up as either inputs or outputs and are not replicated to any other ports with the exception of the hard-wired in-line taps.***

© 2012 Datacom Systems Inc



The default configuration has Ports 1 and 2 hard-wired as an inline tap Ensure there are no previous settings present, go through Ports 1-10 and set them to OFF as shown:

```
# SET PORT MONITOR 1 OFF
# SET PORT MONITOR 2 OFF
# SET PORT MONITOR 3 OFF
# SET PORT MONITOR 4 OFF
# SET PORT MONITOR 5 OFF
# SET PORT MONITOR 6 OFF
# SET PORT MONITOR 7 OFF
# SET PORT MONITOR 8 OFF
# SET PORT MONITOR 9 OFF
# SET PORT MONITOR 10 OFF
```

Now you can begin setting the Tap and Monitor ports as to which port inputs the data and which ports aggregate and/or output the data.

Port 1 is set as output for Ports 7, 8 and 9's input which is set with this syntax:

```
# SET PORT MONITOR 1 FROM 7,8,9
```

Port 2 is set as output for Ports 7, 8 and 9's input which is set with this syntax:

```
# SET PORT MONITOR 2 FROM 7,8,9
```

Port 5 is set as output for Port 4's input which is set with this syntax:

```
# SET PORT MONITOR 5 FROM 4
```

Port 6 is set as output for Ports 3 and 4's input which is set with this syntax:

```
# SET PORT MONITOR 6 FROM 3,4
```

© 2012 Datacom Systems Inc

Port 7 is set as output for Port 1's input/output which is set with this syntax:
SET PORT MONITOR 7 FROM 1

Port 8 is set as output for Port 2's input/output which is set with this syntax:
SET PORT MONITOR 8 FROM 2

Port 9 is set as output for Ports 1 and 2's input/output which is set with this syntax:
SET PORT MONITOR 9 FROM 1,2

Port 10 is set as output for Ports 1, 2, 3, and 4's input which is set with this syntax:
SET PORT MONITOR 10 FROM 1,2,3, 4

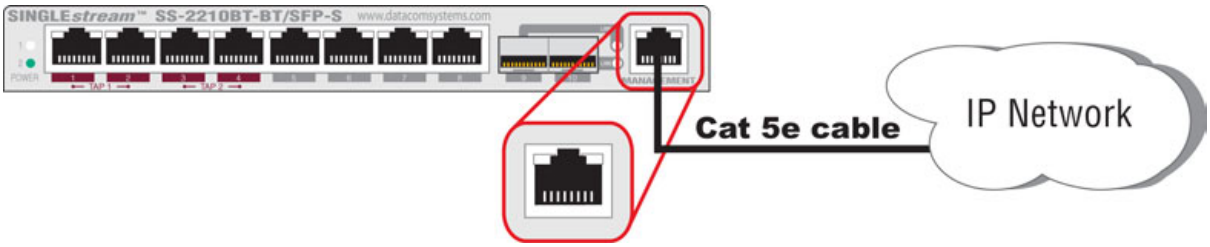
As a quick check, show port routing interface matrix with this syntax:
SH PO RO

```
                                Outputs
        01   02   03   04   05   06   07   08   09   10
01  ----------X------------------------------X----------X-----X
02  ------X-------------------------------------------X----X-----X
03  ------------------------------------X-------------------------X
04  ---------------------------------X----X-------------------------X
05  ------------------------------------------------------------------
06  ------------------------------------------------------------------
07  ------X-----------------------------------------------------------
08  ----------X-------------------------------------------------------
09  ------X----X-------------------------------------------------------
10  ------------------------------------------------------------------
#
```

This completes the exercise using the Command Line Interface for setting ports.

4.6 Management Connection (RJ45)

Once installation of the Link Aggregation Tap has been completed in your chosen network location, see Hardware Installation 61 section, management connection is initiated over the network via either TELNET or SSH as explained in the following section.



© 2012 Datacom Systems Inc

4.6.1 TELNET

Note: For security, TELNET can be disabled using the Command Line Interface.

IMPORTANT: For **hostname,** if initial IP Address **HAS BEEN** configured, as is the case shown below, use the **Local Area Network** address setting input during initial IP Address configuration. Otherwise, if initial IP Address **HAS NOT BEEN** configured, see the Management Module Connection 40 section in the Management (RJ45) 41 section.

TELNET using **MANAGEMENT** RJ45 - software configuration of the hardware

At the Windows command prompt enter:
telnet
At the Microsoft Telnet> prompt enter:
o nnn.nnn.nnn.nnn (open hostname) [i.e., o Local Area Network IP]

Step 1. Open the Command Prompt on your PC by selecting **START > All Programs > Accessories > Command Prompt**

Step 2. In the **Command Prompt** window, at the prompt, enter TELNET and hit the **Enter** key. (To see a list of available Microsoft Telnet Client Commands, at the prompt, enter ? and hit the **Enter** key. Supported commands will be displayed.)

Step 3. At the **Command Prompt** window prompt, enter o Local Area Network IP and hit the **Enter** key.

Step 4. You are now connected at the **Enter Username:** prompt. Usernames and passwords are case-sensitive. Type **Administrator** (default value) and press the **Enter** key. At the **Enter Password:** prompt, type **admin** (default value) and press the **Enter** key to display the command line **>** prompt. To see a list of available commands, at the **>** command line prompt, type **?** and press the **Enter** key .

Step 5. Type **Exit** and press the **Enter** key to end the connection session as indicated in a few seconds by the Windows informational message balloon pop-up icon "**Local Area Connection** - A network cable is unplugged."

Step 6. Close TELNET.

© 2012 Datacom Systems Inc

4.6.2 SSH

Secure Shell (SSH) is a network protocol that uses public key cryptography that allows secure network services to be exchanged over an insecure network between two networked devices. SSH Secure Shell with its array of unmatched security features is an essential tool in today's network environment. It is a powerful guardian against the numerous security hazards that nowadays threaten network communications.

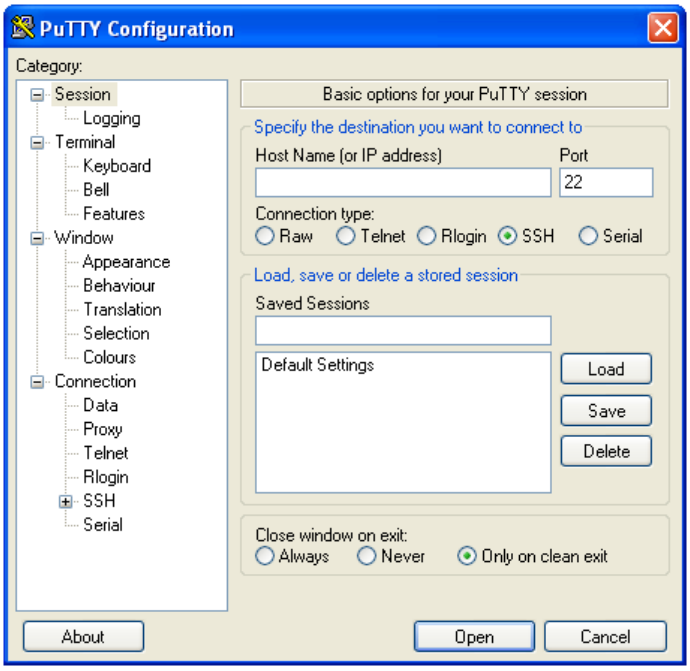
Several different versions of the Secure Shell client and server exist. Please note that the different versions may use different implementations of the SSH protocol, and therefore you may not be able to connect to an SSH1 server using SSH2 client software, or vice versa.

Restrictions for Secure Shell Version 2 Support:

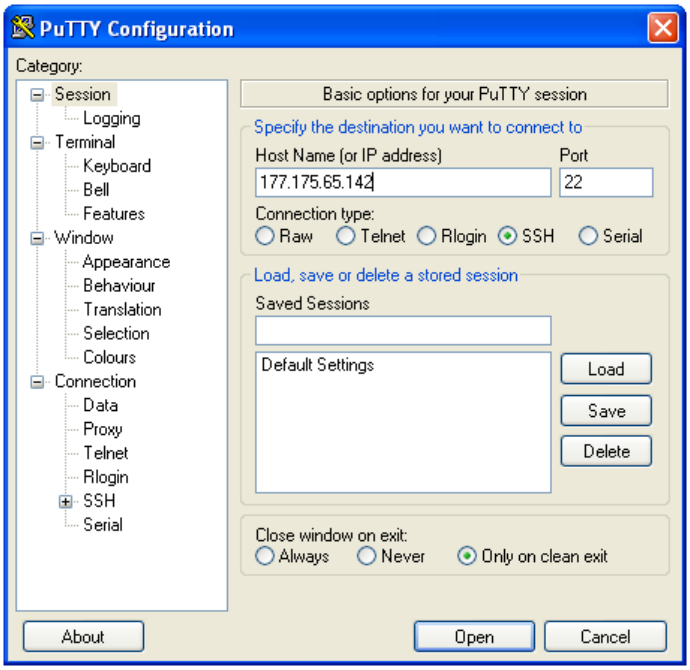
- Execution Shell and remote command execution are the only applications supported.
- Compression is not supported.

The following instructions illustrate a "typical" PuTTY SSH client configuration. This example was prepared using PuTTY version 0.60. PuTTY.

Step 1. When you start PuTTY, you see the dialog box that allows you to control everything PuTTY can do. You don't need to change most of the configuration options. To start the simplest kind of session, all you need to do is to enter a few basic parameters.



Step 2. In the **Host Name (or IP address)** box, enter the host name or IP address of the SSH Server you want to connect to. Once you have filled in the **Host Name (or IP address)**, **Connection type:** [default: SSH] and possibly **Port** [default: 22] settings, you are ready to connect.



Step 3. Press the **Open** button at the bottom of the dialog box, and PuTTY will begin trying to connect you to the server. If you are using SSH to connect to the SSH Server for the first time, you will probably see a message looking something like this:

PuTTY Security Alert
The server's host key is not cached in the registry. You have no guarantee that the server is the computer you think it is.
The server's rsa2 key fingerprint is:
ssh-rsa 2048 6e:02:5f:34:af:72:bc:6c:97:02:c2:7b:a8:1d:16:17
If you trust this host, hit Yes to add the key to PuTTY's cache and carry on connecting.
If you want to carry on connecting just once, without adding the key to the cache, hit No.
If you do not trust this host, hit Cancel to abandon the connection.
Yes
No
Cancel

The warning message above asks you whether you want to trust this host key or not. This is a feature of the SSH protocol, it is designed to protect against a network attack known as *spoofing* which redirects your connection to a different computer, so that you send your password to the wrong machine. To prevent this attack, each SSH Server has a unique identifying code, called a *host key*. So if you connect to a SSH Server and it sends you a different host key from the one you were expecting, you will have the chance to abandon your connection before you type any private information (such as a password) into it.

© 2012 Datacom Systems Inc

Whether or not to trust the host key is your choice. Connecting within a company network, you might feel that all the network users are on the same side and spoofing attacks are unlikely, so you might choose to trust the key without checking it. Connecting across a hostile network (such as the Internet) you should check with your system administrator.

Step 4. After you have connected, you will be asked to **login as:**, type **Administrator** (default value) and press the **Enter** key. At the **Administrator@hostname (or IP address)'s password:** prompt, type **admin** (default value) and press the **Enter** key to display the command line **>** prompt. To see a list of available commands, at the **>** command line prompt, type **?** and press the **Enter** key .

Step 5. Type **Exit** and press the **Enter** key to end the connection session. Close PuTTY.

4.7 SNMP Configuration

IMPORTANT: SNMP ***MUST*** be enabled and there ***MUST*** be at least one SNMP user for the SNMP feature to work.

Once installation of the Link Aggregation Tap has been completed in your chosen network location, if at least one SNMP user has not been created, refer to the CLI Command Set 24 to:

Step 1. SET SNMPv3 (SE V3) 39 [ON].

Step 2. SET SNMPV3 SUPERUSER (SE V3 SU) 39 name auth authPass priv privPass

Use your Network Management System to access the Link Aggregation Tap to perform **GET**, **SET**, **TRAP**, etc. SNMP functions.

The Appendix A - Agent Capabilities MIB 81, Appendix B - Power Supply MIB 89 and Appendix C - Structure of Management MIB 103 sections are for your reference.

RELEASE NOTES:

1. When adding a TRAP destination, any specified snmpTargetAddrTagList string must be restricted to alphanumeric characters (0-9, a-z, A-Z).

© 2012 Datacom Systems Inc

4.8 Small Form-Factor Plug Module

This section provides information about small form-factor plug (SFP) modules. The SFP modules are input/output devices that plug into a Gigabit Ethernet (GE) small form-factor (SFF) port, linking the port with a 1000Base-X fiber or 1000Base-T copper network.

The fiber SFP module have a receiver port (Rx) and a transmitter port (Tx) that make up one optical interface.The 1000Base-SX (short wavelength) SFP module operates on standard multimode fiber networks compliant with the 1000Base SX standard. The 1000Base-LX (long wavelength) SFP module operates on standard single-mode fiber networks compliant with the 1000Base LX standard. The fiber SFP module is a 1000 Mbps optical interface in the form of an LC-type duplex port that supports interfaces compliant with the 1000Base-X standard.

The copper SFP module is compliant with the 1000Base-T standard and operates on standard Category 5 wiring and has an RJ45 connector.

4.8.1 Intallation Prerequisites

This section describes safety and compliance guidelines you should observe before you install an SFP module in your SS-1200-S, SS-2200-S or SS-4200-S series unit.

NOTE: You can install and remove SFP modules with power on to the system; however, it is strongly recommended that you do not install or remove the SFP module with fiber or copper cables attached to it. Disconnect all cables before removing or installing a SFP module.

CAUTION: Prevent system problems, use only Datacom Systems Inc. supplied SFP modules.

4.8.2 Safety Guidelines

Before handling a SFP module, observe the following guidelines:

- Copper and fiber SFP modules are static-sensitive. To prevent electrostatic discharge (ESD) damage, follow your normal ESD handling procedures.
- Fiber SFP modules are dust-sensitive. When storing a SFP module or when a fiber cable is not plugged in, always keep plugs in the SFP module optical hole.
- The most common source of contaminants in the fiber SFP optical aperture is debris picked up on the terminations of the optical connectors. Use an alcohol swab or lint-free absorbent wipes to clean the terminations of the optical connector.

WARNING: Fiber SFP modules are class 1 laser and LED products. Invisible laser radiation may be emitted from the port opening when no fiber cable is connected, avoid exposure to laser radiation and do not stare in open optical ports.

© 2012 Datacom Systems Inc

4.8.3 Installing the SFP Module

SFP modules might ship already installed in your SS-1200-S, SS-2200, or they might arrive packaged separately. This section describes how to install the SFP module.

NOTE: You can install SFP modules with power on to the system; however, it is strongly recommended that you do not install the SFP module with fiber or copper cables attached to it. Disconnect all cables before installing a SFP module.

CAUTION: Prevent system problems, use only Datacom Systems Inc. supplied SFP modules.

Step 1. Turn the SFP module so the latch is towards the center of the Gigabit Ethernet Interface sockets. The SFP module is keyed so that it cannot be inserted incorrectly.

Step 2. Insert the SFP module into the SFF port and repeat **Step 1** and **Step 2** inserting other SFP modules until completed.

Step 3. Attach the appropriate network cable to the LC-type or RJ45-type connector on the SFP module. For fiber optic SFP modules you can use either simplex or duplex connectors. For simplex connectors, two cables are required, one cable for transmit (Rx) and a second cable for receive (Rx). For duplex connectors, only one cable that has both Tx and Rx connectors is required.

4.8.4 Removing the SFP Module

SFP modules might ship already installed in your SS-1200-S, SS-2200, or they might arrive packaged separately. This section describes how to remove the SFP module.

NOTE: You can remove SFP modules with power on to the system; however, it is strongly recommended that you do not remove the SFP module with fiber or copper cables attached to it. Disconnect all cables before removing a SFP module.

Step 1. Disconnect the network cable from the SFP module LC-type or RJ45-type connector.

Step 2. Release the SFP module from the GE SFF port by moving the swing latch away from the body of the unit.

Step 3. Slide the SFP module out of the GE SFF port.

© 2012 Datacom Systems Inc

5 Hardware Installation

This section describes the SS-1200-S, SS-2200-S and SS-4200-S series hardware installation at the network site of your choice.

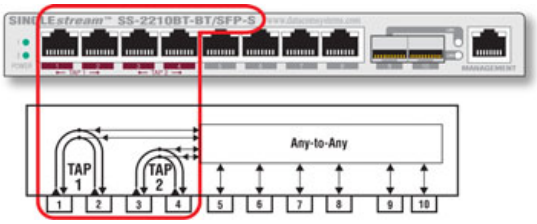
For specific applications see the 'Application 69' section.

5.1 TAP Connection

This section will focus on the **TAP** connection(s) of the typical series hardware installation.

5.1.1 Copper SS-1200BT-S and SS-2200BT-S series

1. This section describes the SS-1200BT-S or SS-2200BT-S copper **TAP** connection(s) of the configurable series hardware installation.



WARNING: The copper **TAP** port is bidirectional Tx/Rx path sensitive. PRIOR TO POWERING THE TAP, both end-device LINK LEDs must indicate “LINK” to ensure correct power fault tolerant tap functionality during loss of power.

WARNING: 100 meters must not be exceeded between CAT 5E end-points.

IMPORTANT: All BT taps can be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

Step 1. Connect one of the copper network cables to a RJ45 **TAP** (SS-1200BT-S series) or **TAP 1** (SS-2200BT-S series) port socket.

Step 2. Connect the other copper network cable to the other RJ45 **TAP** (SS-1200BT-S series) or **TAP 1** (SS-2200BT-S series) port socket.

Step 3. End-device LINK LEDs must indicate “LINK” PRIOR TO POWERING THE TAP to ensure correct power fault tolerant tap functionality during loss of power. If “LINK” does not exist, the network connection is backwards. Reverse **TAP** (SS-1200BT-S series) or **TAP 1** (SS-2200BT-S series) port socket connections and “LINK” will be established.

Step 4. Repeat **Step 1.**, **Step 2.** and **Step 3.** to connect **TAP 2** of the SS-2200BT-S series to another network.

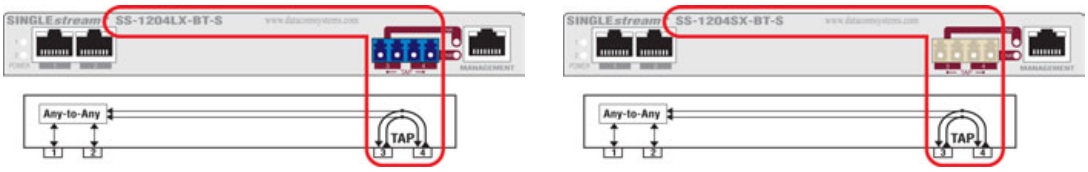
© 2012 Datacom Systems Inc

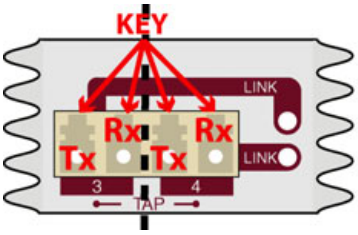
TAP (SS-1200BT-S series port **1** and port **2**) or **TAP 1** and **TAP 2** (SS-2200-S series port **1** and port **2;** port **3** and port **4)** are RJ45 connectors used for connection to network segments. These jacks have integrated LEDs that display line status and line speed of each port. See the **TAP LED Display Code** table for LED display codes.

TAP LED Display Code				
Code	**Left LED**		**Right LED**	**Code**
Link	Solid Green		Green	1,000 Mbs
Data	Flashing Green		Orange	100 Mbs
	(with Left Link or Data) ←		Off	10 Mbs

5.1.2 Fiber Optic SS-1200LX-S and SS-1200SX-S series

This section shows the fiber optic SS-1200LX-S or SS-2200SX **TAP** connection(s) of the typical configurable series hardware installation.





WARNING: ***The fiber taps in each SS-1200LX series and SS-1200SX series unit are directional devices. The Rx /Tx connector pair orientation of the fibers connecting to the unit must match the connection diagrams or no data will be visible out the Any-to-Any Ports to the tools.***

Step 1. Connect one of the fiber optic duplex network cables to a **TAP** port socket. The **LINK** LED associated with this **TAP** quad-LC socket illuminates green indicating light signal has been detected on the respective Rx **TAP** port.

Step 2. Connect the other fiber optic duplex network cables to the other **TAP** port socket. The **LINK** LED associated with this **TAP** quad-LC socket illuminates green indicating light signal has been detected on the respective Rx **TAP** port.

TAP (SS-1200LX-S and SS-1200SX-S series port **9** and port **10**) are dual-duplex LC connectors used for connection to network segments. The LEDs located to the right of the dual-duplex LC connectors are solid green indicating a light level link has been detected by the respective **TAP** Rx port.

© 2012 Datacom Systems Inc

5.2 Power

This section describes the power connection at the network installation site of the SS-1200-S, SS-2200-S configurable series.

or

Two DC input power sockets are provided on the rear panel. The front panel **POWER 1** and **2** LEDs are illuminated green, respectively:

- (BT series) - when DC power is available at both the two rear DC power sockets; or
- (SFP series) - when the DC **POWER** switch is depressed **ON** and DC power is available at both the two rear DC power sockets.

Either **POWER 1** or **2** LED not illuminated when powered, indicates a defective power source and immediate investigation as to the cause is required to insure redundant power integrity.

1. **Step 1.** Using the supplied Power Adapters and AC Line Cords, plug the SS-1200-S, SS-2200-S series into different circuit external power sources.Although only one power supply is required to power the configurable unit, use of a second independent power source is strongly recommended to assure uninterrupted monitoring. Furthermore, connecting the second Power Adapter to a different external power source circuit than the first AC power source eliminates power as a single point of failure.

5.3 Any-to-Any Connection

This section will focus on the **Any-to-Any** port connection of the typical SS-1200-S, SS-2200-S series hardware installation.

NOTE: For SS-1200-S, SS-2200-S series with a Gigabit Ethernet (GE) small form-factor (SFF) port, the SFP modules might ship already installed in your unit, or they might arrive packaged separately. See the 'Small Form-Factor Pluggable' section, 'Installing the SFP Module 59,' on how to install the SFP module.

Step 1. Connect a network or monitoring cable to an **Any-to-Any** port socket and the other side of this cable to the network or monitoring tool NIC port as appropriate..

Step 2. Continue repeating **Step 1.** for any remaining **Any-to-Any** port socket you want connected from the SS-1200-S, SS-2200-S series.

© 2012 Datacom Systems Inc

These port sockets have integrated LEDs that display line status and line speed of each port. See the **Any-to-Any Port LED Display Code** table for LED display codes.

Any-to-Any RJ-45 LED Display Code				
Code	Left LED		Right LED	Code
Link	Solid Green		Green	1,000 Mbs
Data	Flashing Green		Orange	100 Mbs
	(with Left Link or Data) ←		Off	10 Mbs

5.4 Management Connection

This section shows the **MANAGEMENT** port 100 Mbs Full-Duplex connection of the typical SS-1200-S, SS-2200-S configurable series hardware installation.

Step 1. Connect a network cable to the **MANAGEMENT** port RJ45 socket. The **MANAGEMENT** port RJ45 left LED illuminates green when link has been established with the network. The **MANAGEMENT** port right LED illuminates green when passing data.

The **MANAGEMENT PORT** is an RJ45 socket used for 100 Mbs full-duplex connection with a straight-through LAN cable via your management LAN to a Remote Management Console which is a standard PC using a Telnet terminal emulator software application.

Management Port LED Display Code				
Code	Left LED		Right LED	Code
Link	Solid Green		Flashing Green	Data

Link indicates connection. The LED Display Code table deciphers the RJ45 jacks with integrated LEDs that display line status of the **MANAGEMENT PORT**.

Related topics: 1) Management Connection (RJ45) 53, 2) Telnet 54, 3) SSH 55 and 4) SNMP Configuration 57.

© 2012 Datacom Systems Inc

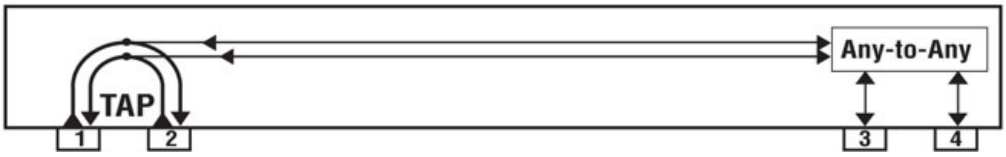
6 Functional Drawing

This section contains the SS-1200-S, SS-2200-S and SS-4200-S series functional drawings.

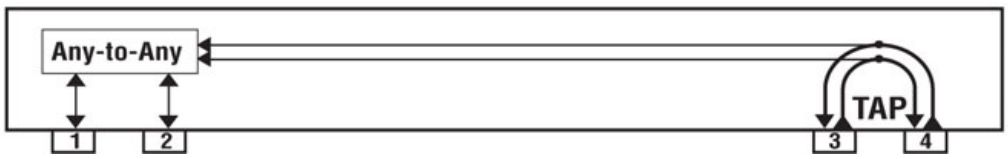
6.1 SS-1200-S Series

SS-1204BT-BT-S

SS-1204BT-SFP-S

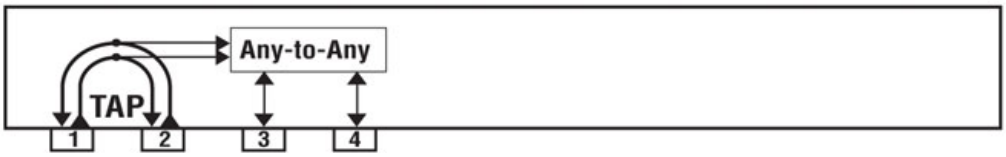


SS-1204LX-BT-S

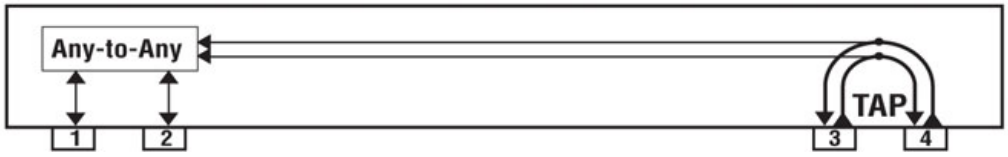


© 2012 Datacom Systems Inc

SS-1204LX-SFP-S



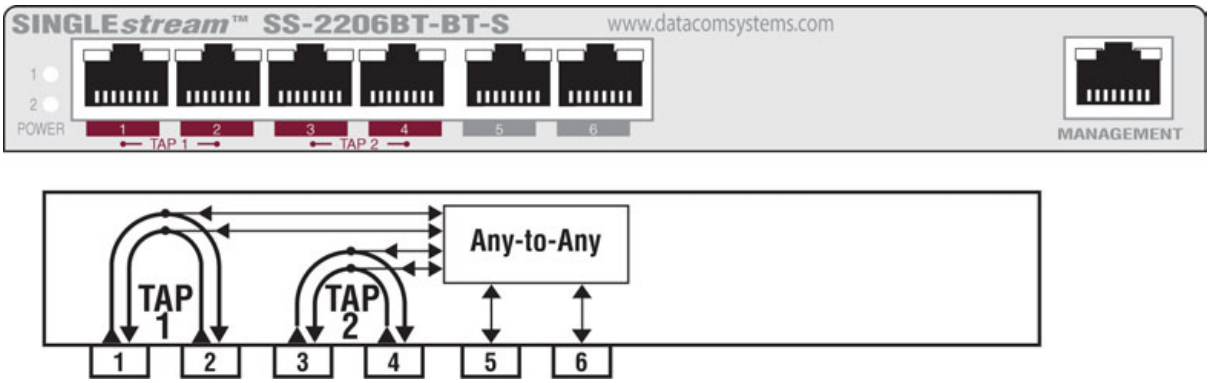
SS-1204SX-BT-S



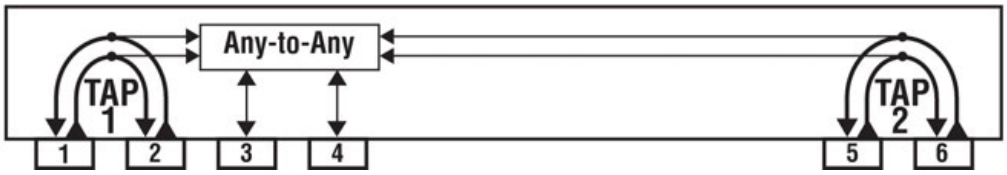
© 2012 Datacom Systems Inc

6.2 SS-2200-S Series

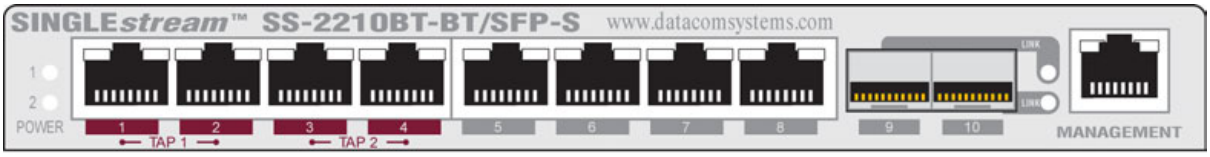
SS-2206BT-BT-S

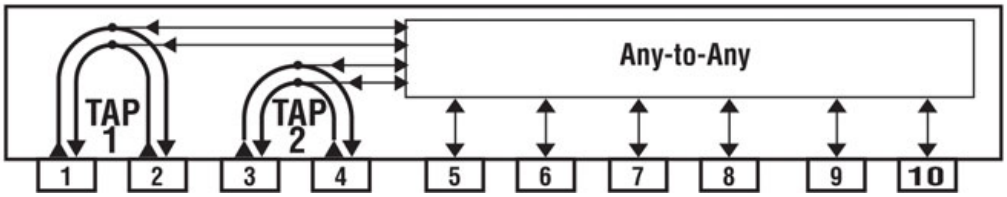


SS-2206SX-SFP-S



SS-2210BT-BT/SFP-S

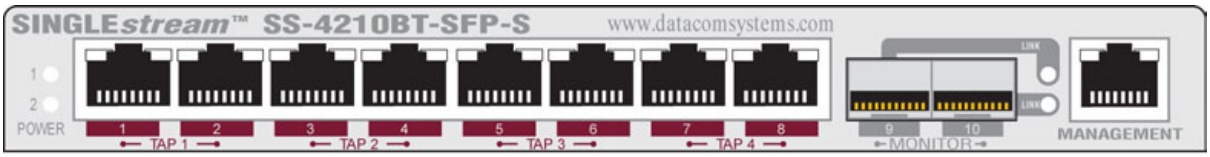


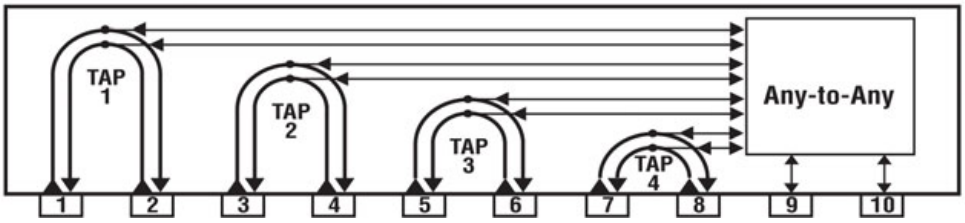


© 2012 Datacom Systems Inc

6.3 SS-4200-S Series

SS-4210BT-SFP





© 2012 Datacom Systems Inc

7 Application

This section will present techniques and applications describing the practical use and new remedies for performing network analysis requirements using SS-1200-S, and SS-2200-S series solutions. The SS-4200-S series solutions are similar.

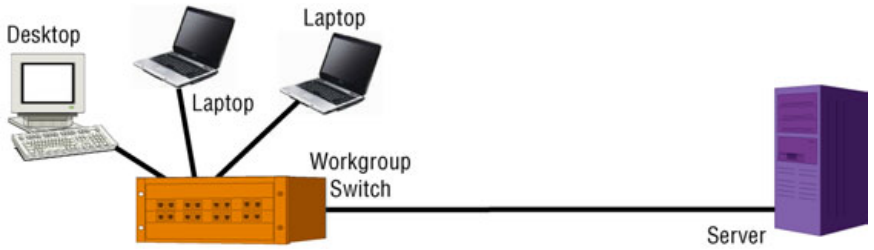
7.1 SS-1200 Series

This section describes examples to familiarize you with the basic configuration process.

7.1.1 Utilization less than 50 percent (HyperTerminal configuration example)

PREMISE: Most interfaces typically operate at far less than half of their available bandwidth. Ethernet link utilization is at its lowest closest to the network edge. Although hard data is difficult to come by, anecdotal research reveals that a typical fast Ethernet link operates at less than 10-20 percent of bandwidth utilization and Gigabit Ethernet at less than 5-10 percent of bandwidth utilization in enterprise edge applications - where users interface the network.

This network application example consists of users distributed across a workgroup switch that allows end users server access. The server and end users utilization is less than 50 percent during peak load periods. The security department wants to view all server bound access from the users and view user bound traffic from the server.



GOAL: This application will use a SS-1204BT-BT-S as follows:

1. View user traffic to and from the server.
2. Provide access for redundant security tools.

The tap will allow better visibility to user-server traffic. A power fault tolerant tap does not bring down the network link if the tap fails. The first goal requires tapping the link between the workgroup switch and the server.

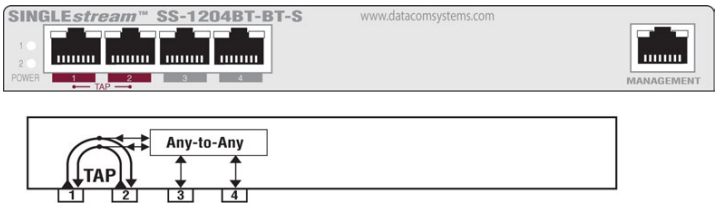
The second goal involves aggregating and replicating traffic from the access method developed previously. The SS-1204BT-BT-S acts as an aggregating tap, combining the data for the redundant security tools.

SOLUTION: The SS-1204BT-BT-S taps the link, accepts the input from the workgroup switch and server, aggregates and replicates the traffic to multiple ports for analysis and utilizes the ***factory***

© 2012 Datacom Systems Inc

default LINK PROTECT settings. With the ***factory default*** LINK PROTECT settings, if one side of the network traffic is interrupted for longer than 10 seconds, the tap will enter bypass mode and the other side of the network will also drop "LINK" with the integrated tap. See the SET LINK PROTECT 36 section for additional information. The SS-1204BT-BT-S has a built in tap on ports 1 and 2 which make copies of the traffic flowing through the unit.

Where the aggregate bandwidth exceeds capacity, drops are inevitable and then the application where 'Utilization greater than 50 percent 72' should be considered as a solution..



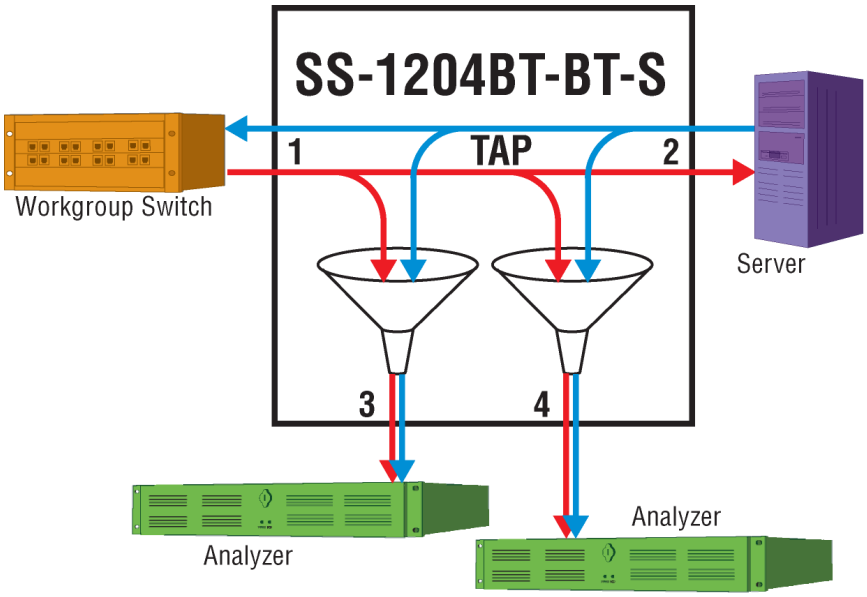
CONFIGURATION: The IP address (default 192.168.1.1), Subnet Mask and Default Gateway is set during the 'Initial Configuration' for your Local Area Network settings and will not be covered in this section, see the 'IP Address Configuration with HyperTerminal 42' section for those steps. Use the syntax below in the Command Line Interface (CLI) to setup Tap and Any-to-Any ports (syntax is shown with either user > or Superuser # prompts):

For configuration, open HyperTerminal on your Management PC using the SS-1204BT-BT-S **SERIAL** DB9 port. Settings are found in the 'Initial Configuration', 'SERIAL Port Configuration (DB9)', 'HyperTerminal 40' section.

Press twice **Enter** key and **Enter** key. Enter **Username** (default: Administrator) and **Enter** key. Enter **Password** (default: admin) and **Enter** key. Default prompt is the > symbol. Enter superuser mode, type **su** and **Enter** key. Enter the **Password** (default: password) and **Enter** key. Default prompt is the # symbol. Use the following syntax to set the input/output for Any-to-Any ports as well as the output for Tap ports.

© 2012 Datacom Systems Inc

The factory default for all Any-to-Any ports on all aggregation taps (SS-1200-S series and SS-2200-S series) ***are turned off by default - i.e. they are not set up as either inputs or outputs and are not replicated to any other ports with the exception of the hard-wired in-line taps.***



The default configuration has Ports 1 and 2 hard-wired as an inline tap. Ensure there are no previous settings present, go through Ports 1-4 and set them to OFF as shown:

SET PORT MONITOR 1 OFF
SET PORT MONITOR 2 OFF
SET PORT MONITOR 3 OFF
SET PORT MONITOR 4 OFF

Now you can begin setting the Tap and Any-to-Any ports as to which port inputs the data and which ports aggregate and/or output the data.

Port 3 is set as output for Port 1 and 2's input which is set with this syntax:

SET PORT MONITOR 3 FROM 1,2

Port 4 is set as output for Port 1 and 2's input which is set with this syntax:

SET PORT MONITOR 4 FROM 1,2

IMPORTANT: If desired, this BT tap could be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

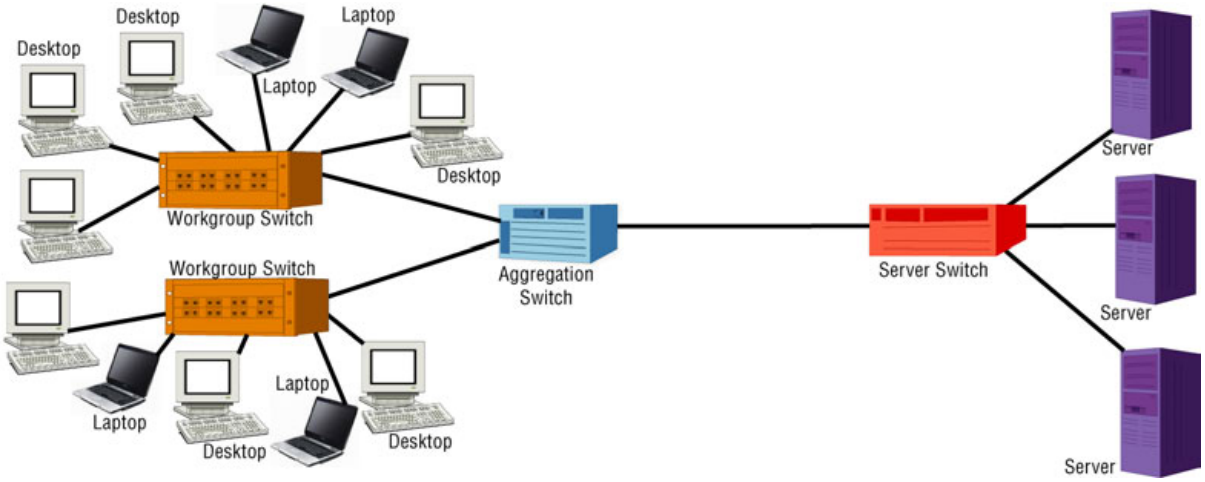
© 2012 Datacom Systems Inc

7.1.2 Utilization greater than 50 percent (Telnet configuration example)

PREMISE: Utilization increases due to network congestion caused by users attempting to use capacity concurrently and fanning multiple devices into a single port contending for bandwidth. Pushing the limits of speed and bandwidth utilization increases closer to the core of a network, where a more constant stream of data is the norm.

When bandwidth utilization increases greater than 50 percent capacity, the application example 'Utilization less than 50 percent 69' is no longer a reliable answer to the analysis solution.

This network application example consists of users distributed across two workgroup switches that allows end users access to the server farm via a server switch. The server switch and end users utilization is greater than 50 percent during peak load periods. The security department wants to view all server bound access from the users and view user bound traffic from the server.



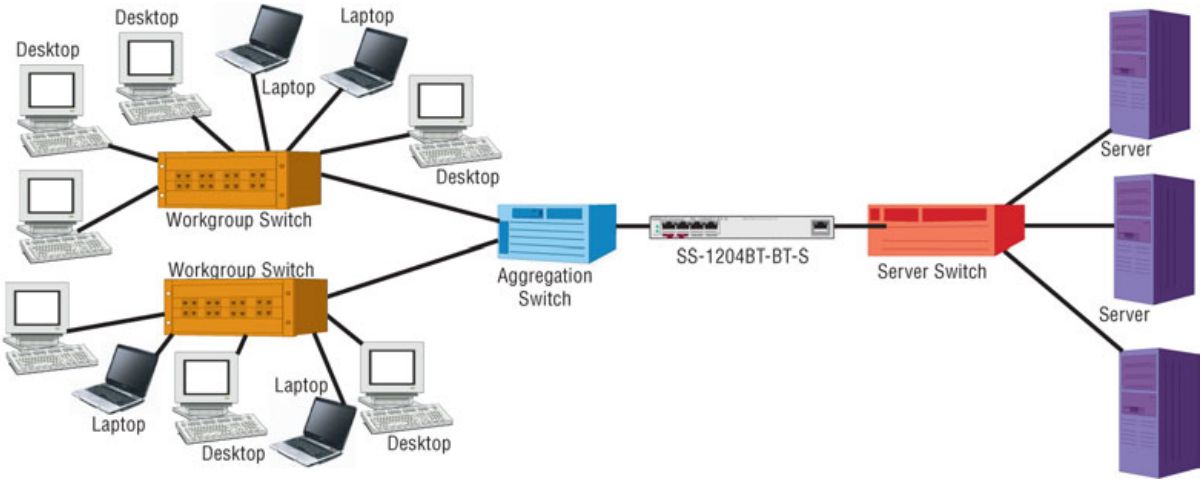
GOAL: This application will use a SS-1204BT-BT-S as follows:

1. View user traffic to and from the servers.
2. Provide access for security tool.

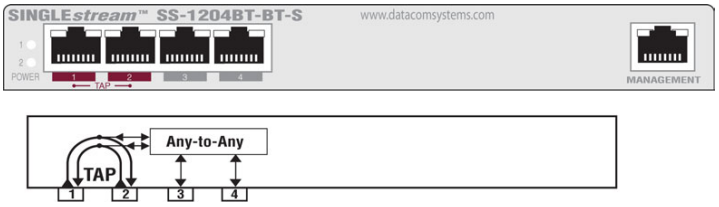
The first goal requires tapping the link between the workgroup switch and the server switch. A power fault tolerant tap does not bring down the network link if the tap fails. The tap will allow better visibility to user-server traffic.

The second goal involves replicating traffic from the access method developed previously. The SS-1204BT-BT-S acts as a standard tap, replicating each side of the network traffic to a single output port for the security tool.

© 2012 Datacom Systems Inc



SOLUTION: The SS-1204BT-BT-S taps the link, accepts the input from the workgroup switch and server switch, replicates the traffic to multiple ports for analysis and utilizes the ***factory default*** LINK PROTECT settings. With the ***factory defau***lt LINK PROTECT settings, if one side of the network traffic is interrupted for longer than 10 seconds, the tap will enter bypass mode and the other side of the network will also drop "LINK" with the integrated tap. See the SET LINK PROTECT 36 section for additional information. The SS-1204BT-BT-S has a built in tap on ports 1 and 2 which make copies of the traffic flowing through the unit.



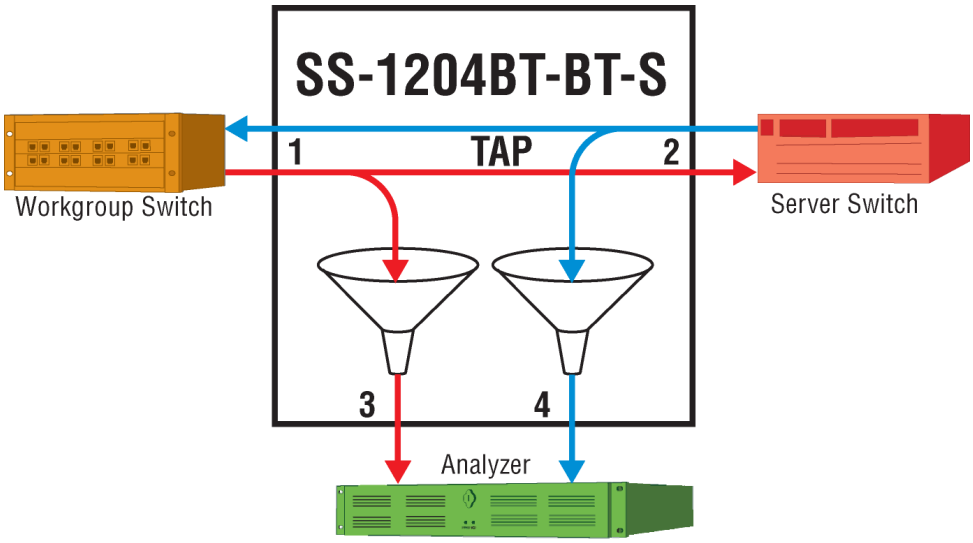
CONFIGURATION: The IP address (default 192.168.1.1), Subnet Mask and Default Gateway is set during the 'Initial Configuration' for your Local Area Network settings and will not be covered in this section, see the 'IP Address Configuration with TELNET 46' section for those steps. Use the syntax below in the Command Line Interface (CLI) to setup Tap and Any-to-Any ports (syntax is shown with either user > or Superuser # prompts):

For Configuration, open TELNET on your Management PC and open a **hostname** connection with the SS-1204BT-BT-S**MANAGEMENT** RJ45 port. Settings are found in the 'Initial Configuration', 'MANAGEMENT Port Configuration (RJ45)', 'TELNET 41' section.

Enter **Username** (default: Administrator) and **Enter** key. Enter **Password** (default: admin) and **Enter** key. Default prompt is the > symbol. Enter superuser mode, type **su** and **Enter** key. Enter **Password** (default: password) and **Enter** key. Default prompt is the # symbol. Use the following syntax to set the input/output for Any-to-Any ports as well as the output for Tap ports.

© 2012 Datacom Systems Inc

The factory default for all aggregation taps (SS-1200-S series and SS-2200-S series) ***are turned off by default - i.e. they are not set up as either inputs or outputs and are not replicated to any other ports with the exception of the hard-wired in-line taps.***



The default configuration has Ports 1 and 2 hard-wired as an inline tap. Ensure there are no previous settings present, go through Ports 1-4 and set them to OFF as shown:

```
# SET PORT MONITOR 1 OFF
# SET PORT MONITOR 2 OFF
# SET PORT MONITOR 3 OFF
# SET PORT MONITOR 4 OFF
```

Now you can begin setting the Tap and Any-to-Any ports as to which port inputs the data and which ports aggregate and/or output the data.

Port 3 is set as output for Port 1's input which is set with this syntax:

```
# SET PORT MONITOR 3 FROM 1
```

Port 4 is set as output for Port 2's input which is set with this syntax:

```
# SET PORT MONITOR 4 FROM 2
```

IMPORTANT: If desired, this BT tap could be configured to have traffic, for example TCP resets, injected from Any-to-Any ports.

© 2012 Datacom Systems Inc

7.2 SS-2200 Series

This section describes an application example to familiarize you with the basic SS-2200-S series configuration process.

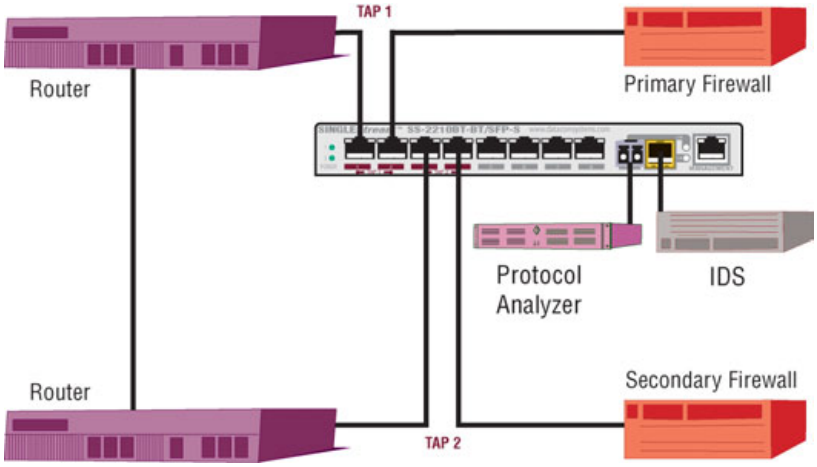
7.2.1 Tapping the Firewall (Telnet configuration example)

PREMISE: This network application consists of two redundant routers that send outbound traffic to one of two redundant high-availability firewalls

GOAL: This application will use a SS-2210BT-BT/SFP-S as follows:

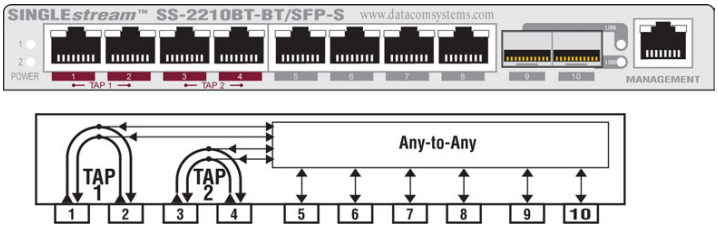
1. Secure and analyze traffic from either firewall.

The goal requires securing and analyzing the traffic entering or leaving each firewall and not lose either capability should one of the firewall fail. This is accomplished by tapping both links to each firewall with a power fault tolerant tap. The Intrusion Detection System (IDS) and Protocol Analyzer will each require two ports with the capability to aggregate streams of traffic together.



© 2012 Datacom Systems Inc

SOLUTION: The SS-2210BT-BT/SFP-S taps both links, aggregates traffic together and utilizes ***factory default*** LINK PROTECT settings. Four ports (6 through 8) are setup to send non-aggregated traffic to other tools for redundancy. Ports 9 and 10 are small form pluggables that allow outputs in either fiber or copper connectivity media. Since multiple device can all be configured to receive the same data, the SS-2210BT-BT/SFP-S is perfect for product comparisons.



CONFIGURATION: The IP address (default 192.168.1.1), Subnet Mask and Default Gateway is set during the 'Initial Configuration' for your Local Area Network settings and will not be covered in this section, see the 'IP Address Configuration with TELNET 46' section for those steps. Use the syntax below in the Command Line Interface (CLI) to setup Tap and Any-to-Any ports (syntax is shown with either user > or Superuser # prompts):

For Configuration, open TELNET on your Management PC and open a **hostname** connection with the SS-2210BT-BT/SFP-S **MANAGEMENT** RJ45 port. Settings are found in the 'Initial Configuration', 'MANAGEMENT Port Configuration (RJ45)', 'TELNET 41' section.

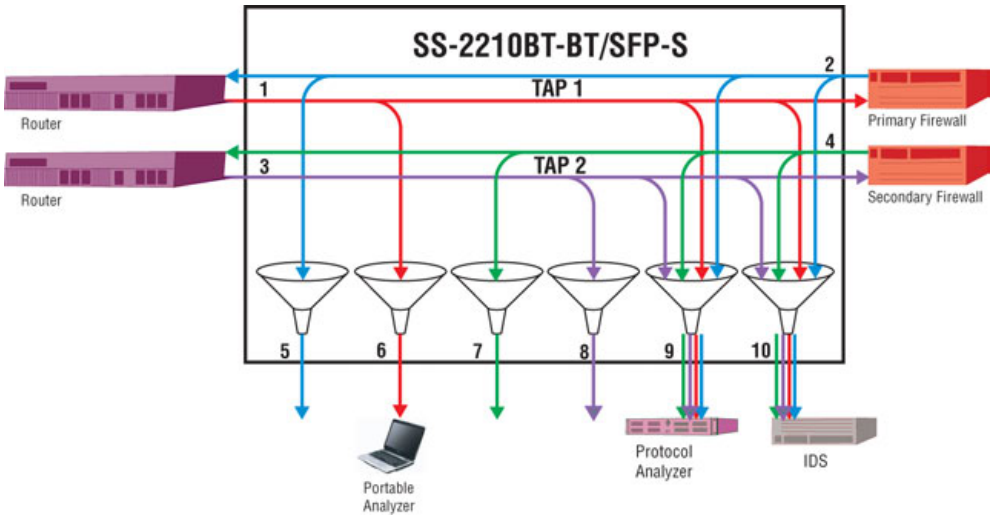
Enter **Username** (default: Administrator) and **Enter** key. Enter **Password** (default: admin) and **Enter** key. Default prompt is the > symbol. Enter superuser mode, type **su** and **Enter** key. Enter **Password** (default: password) and **Enter** key. Default prompt is the # symbol. Use the following syntax to set the input/output for Any-to-Any ports as well as the output for Tap ports.

The factory default for all Any-to-Any ports on all aggregation taps (SS-1200-S series and SS-2200-S series) ***are turned off by default - i.e. they are not set up as either inputs or outputs and are not replicated to any other ports with the exception of the hard-wired in-line taps.***

The default configuration has Ports 1, 2, 3 and 4 hard-wired as inline taps. Ensure there are no previous settings present, go through Ports 1-10 and set them to OFF as shown:

```
# SET PORT MONITOR 1 OFF
# SET PORT MONITOR 2 OFF
# SET PORT MONITOR 3 OFF
# SET PORT MONITOR 4 OFF
# SET PORT MONITOR 5 OFF
# SET PORT MONITOR 6 OFF
# SET PORT MONITOR 7 OFF
# SET PORT MONITOR 8 OFF
# SET PORT MONITOR 9 OFF
# SET PORT MONITOR 10 OFF
```

© 2012 Datacom Systems Inc



Now you can begin setting the ports as to which port inputs the data and which ports aggregate and/or output the data.

Port 5 is set as output for 2's input which is set with this syntax:
SET PORT MONITOR 5 FROM 2

Port 6 is set as output for 1's input which is set with this syntax:
SET PORT MONITOR 6 FROM 1

Port 7 is set as output for Port 4's input which is set with this syntax:
SET PORT MONITOR 7 FROM 4

Port 8 is set as output for Port 3's input which is set with this syntax:
SET PORT MONITOR 8 FROM 3

Port 9 is set as output for Ports 1,2,3 and 4's input/output which is set with this syntax:
SET PORT MONITOR 9 FROM 1,2,3,4

Port 10 is set as output for Ports 1, 2, 3, and 4's input which is set with this syntax:
SET PORT MONITOR 10 FROM 1,2,3, 4

CONCLUSION: The SS-2210BT-BT/SFP-S provides the ability to tap two network segments, selectively determine how the traffic is combined and to which ports. Maximum flexibility is achieved, since both links can be aggregated together and sent to multiple output ports. Additional ports are available for devices that do not need to see both links or when troubleshooting specific links. Ports 9 and 10 provide small form pluggable outputs for devices with fiber media. With the ***factory default*** LINK PROTECT settings, if one side of the network traffic, through the SS-2200-S is interrupted for longer than 10 seconds, the tap will enter bypass mode and the other side of the network will also drop "LINK" with the integrated tap. See the SET LINK PROTECT 36 section for additional information.

© 2012 Datacom Systems Inc

8 Customer Service

This USER*guide* was written to help you get to know your new VS-1200 Series quickly and easily. We would welcome any comments or suggestions you may have regarding this USER*guide*. Datacom Customer Service is available via telephone, you may leave a voice message and our Customer Service Staff will return your call as soon as possible. Datacom Customer Service is also available via the Web.

Tel: **+1** 315 463-9541
Web: http://www.datacomsystems.com

8.1 Internet

Obtain additional information about Datacom Systems, Inc. at: http://www.datacomsystems.com

8.2 Warranty

See http://www.datacomsystems.com for warranty detailed information.

8.3 Limits of Liability

See http://www.datacomsystems.com for Limits of Liability detailed information.

© 2012 Datacom Systems Inc

9 Appendix A - Agent Capabilities MIB

The Datacom Agent Capabilities MIB

This Appendix specifies a proprietary MIB module of Datacom Systems Inc.

Distribution of this memo is limited to Datacom product licensees and other interested parties having express written consent from Datacom Systems Inc.

MIB documentation may be requested by contacting us at: http://www.datacomsystems.com.

Copyright Notice

Copyright (C) 2010 Datacom Systems Inc. All Rights Reserved; use is subject to license terms.

Abstract

This memo defines a set of agent identities used to identify Datacom SNMP agents and a set of agent capabilities used to convey the capabilities of Datacom SNMP Agents.

Table of Contents

1. Introduction
2. The Internet-Standard SNMP Management Framework
3. Conventions
4. Overview of the Datacom Agent Capabilities MIB Module
4.1 Agent Identities
4.2 AGENT-CAPABILITIES statements
5. Definitions
6. Acknowledgments
7. Security Considerations
8. References
8.1 Normative References
8.2 Informative References
9. Change Log

1. Introduction

This memo defines a set of agent identities used to identify Datacom

SNMP agents and a set of agent capabilities used to convey the capabilities of Datacom SNMP Agents.

2. The Internet-Standard SNMP Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP).

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

4. Overview of the Datacom Agent Capabilities MIB Module

This MIB module contains OBJECT-IDENTITY definitions used to identify Datacom SNMP agents and contains AGENT-CAPABILITIES statements used to express the capabilities of Datacom SNMP agents.

Each set of definitions is described in the following sections.

4.1 Agent Identities

The identity of a Datacom SNMP agent is exposed as the value of the sysObjectID object. For additional information about the definition of sysObject, see the SNMPv2-MIB [RFC 3418].

Datacom agent identities are defined within the Datacom agentIdents subtree.

Examples of sysObjectID values retrieved from a Datacom SNMP agent by a management application include the following:

© 2012 Datacom Systems Inc

sysObjectID.0 = agentIdCopperConfigurables218
sysObjectID.0 = agentIdAllPluggables227

4.2 AGENT-CAPABILITIES statements

The capabilities of a Datacom SNMP agent are exposed as a set of values in the sysORTable. For additional information about the object definitions comprising the sysORTable, see the SNMPv2-MIB [RFC 3418].

Datacom agent capabilities are defined within the Datacom agentCaps subtree.

Refer to section 6, "Mapping of the AGENT-CAPABILITIES macro" in RFC 2580, "Conformance Statements for SMIv2" [RFC2580] for further information on the use of agent capabilities statements by management application and SNMP agents.

An example of values exposed in the sysORTable follows:

```
sysORID.1     = dcomCapsSNMPv3Base
sysORDescr.1  = "supports SNMPv3"
sysORUpTime.1 = 54

sysORID.2     = dcomCapsAres1dot0dot0
sysORDescr.2  = "supports Datacom ARES version 1.0.0"
sysORUpTime.1 = 55
```

5. Definitions

```
DATACOM-AGENT-CAPS-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-IDENTITY
            FROM SNMPv2-SMI           -- [RFC2578]
    AGENT-CAPABILITIES
            FROM SNMPv2-CONF          -- [RFC2580]
    datacomMibs, agentIdents,
    agentCaps
            FROM DATACOM-SMI-MIB;

datacomAgentCapsMib MODULE-IDENTITY
   LAST-UPDATED "201007260000Z"    -- 26 July 2010, midnight
   ORGANIZATION "Datacom Systems Inc."
```

© 2012 Datacom Systems Inc

```
    CONTACT-INFO
            "Datacom Systems Inc.
             9 Adler Drive
             East Syracuse, NY 13057
             USA

             Telephone:  +1 315 463 1585
              URL:       http://www.datacomsystems.com

             "
    DESCRIPTION
            "The MIB module for defining agent identities and
            agent capabilities for Datacom SNMP Agents.

            Copyright (C) 2010 Datacom Systems Inc. All rights
            reserved. Use is subject to license terms.

            This version of the DATACOM-AGENT-CAPS-MIB module
            is part of Datacom publication, `The Datacom Agent
            Capabilities MIB', July 2010. See the publication
            itself for full legal notices.
            "

    -- Revision log
      REVISION      "201007260000Z"      -- 26 July 2010, midnight
      DESCRIPTION
         "Initial version, as part of Datacom publication
         'The Datacom Agent Capabilities MIB', July 2010.
         "
      ::= { datacomMibs 3 }

--
-- Agent Identities
--

agentIdCopperConfigurables218 OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
       "The Datacom SNMP agent identity for the 'Copper
       Configurables' system based upon the 218 circuit board.

       This value is exposed by the sysObjectID object.
       "
    ::= { agentIdents 218 }

agentIdAllPluggables227 OBJECT-IDENTITY
```

© 2012 Datacom Systems Inc

```
    STATUS      current
    DESCRIPTION
        "The Datacom SNMP agent identity for the 'All
        Pluggables' system based upon the 227 circuit board.

        This value is exposed by the sysObjectID object.
        "
    ::= { agentIdents 227 }


--
-- Agent Capabilities
--

dcomCapsSNMPv3Base AGENT-CAPABILITIES
    PRODUCT-RELEASE
        "Various releases- Indicates support for the base set
        of SNMPv3 MIB modules.
        "
    STATUS current
    DESCRIPTION
        "The Agent Capabilities statement indicating support
        for the base set of SNMPv3 MIB modules.
        "

    SUPPORTS SNMP-MPD-MIB
        INCLUDES {
            snmpMPDGroup
        }

    SUPPORTS SNMP-FRAMEWORK-MIB
        INCLUDES {
            snmpEngineGroup
        }

    SUPPORTS SNMP-TARGET-MIB
        INCLUDES {
            snmpTargetBasicGroup,
            snmpTargetResponseGroup,
            snmpTargetCommandResponderGroup
        }

    SUPPORTS SNMP-NOTIFICATION-MIB
        INCLUDES {
            snmpNotifyGroup,
            snmpNotifyFilterGroup
```

© 2012 Datacom Systems Inc

```
        }

    SUPPORTS SNMP-USER-BASED-SM-MIB
        INCLUDES {
            usmMIBBasicGroup
        }

    SUPPORTS SNMP-VIEW-BASED-ACM-MIB
        INCLUDES {
            vacmBasicGroup
        }

    SUPPORTS SNMPv2-MIB
        INCLUDES {
            snmpGroup,
            snmpSetGroup,
            systemGroup,
            snmpBasicNotificationsGroup
        }
    ::= { agentCaps 1 }

dcomCapsAres1dot0dot0 AGENT-CAPABILITIES
    PRODUCT-RELEASE
        "Datacom ARES version 1.0.0
        "
    STATUS current
    DESCRIPTION
        "The Agent Capabilities statement for Datacom ARES
        version 1.0.0
        "
    SUPPORTS IF-MIB
        INCLUDES {
            ifGeneralInformationGroup,
            linkUpDownNotificationsGroup

        }

        VARIATION      ifPhysAddress
          ACCESS       not-implemented
          DESCRIPTION "not implemented"

        VARIATION      ifAdminStatus
          ACCESS       read-only
          DESCRIPTION "values change according to the
                       corresponding value of ifOperStatus
                       as follow:
```

© 2012 Datacom Systems Inc

```
                ifAdminStatus     ifOperStatus
                -------------     ------------
                   up(1)          up(1)
                   down(2)        down(2)
                   down(3)        unknown(4)
                "

        VARIATION      ifOperStatus
          ACCESS       read-only
          DESCRIPTION "only the following states are
                       implemented:
                         up(1)
                         down(2)
                         unknown(4)
                       "

        VARIATION      ifAlias
          ACCESS       not-implemented
          DESCRIPTION "not implemented"

      SUPPORTS DATACOM-POWER-SUPPLY-MIB
        INCLUDES {
          dcomPowerSupplyStatusGroup,
          dcomPowerSupplyEventGroup
        }

      ::= { agentCaps 2 }

  END
```

6. Acknowledgments

The production and maintenance of this memo is a group effort of the Datacom development team.

7. Security Considerations

This module does not define any management objects. Instead, it defines the top level assignments within the Datacom enterprise name space.

Meaningful security considerations can only be written in MIB modules that define management objects. Therefore, this module does not present any known security concerns.

© 2012 Datacom Systems Inc

8. References

8.1 Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

8.2 Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Network Management Framework", RFC 3410, December, 2002.

[RFC3418] R. Presuhn, "Management Information Base (MIB) for the Simple Network Management Protocol (SNMP)", RFC 3418, December, 2002.

9.0 Change Log

Changes introduced in revision "201007260000Z", 26 July 2010
- initial version

© 2012 Datacom Systems Inc

10 Appendix B - Power Supply MIB

The Datacom Power Supply (PS) MIB

This Appendix specifies a proprietary MIB module of Datacom Systems Inc.

Distribution of this Appendix is limited to Datacom product licensees and other interested parties having express written consent from Datacom Systems Inc.

MIB documentation may be requested by contacting us at http://www.datacomsystems.com.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in the Internet community.

In particular, it defines managed objects and notifications exposing status information about power supplies associated with Datacom products.

Section Contents

1. Introduction
2. The Internet-Standard SNMP Management Framework
3. Conventions
4. Overview
4.1 Use of SMIv2 Syntax and Textual-Conventions
4.1.1 SMIv2 Syntax
4.1.1.1 Unsigned32
4.1.1.2 INTEGER
4.2 SNMPv2-TC Textual Conventions
4.2.1 TimeStamp
4.3 Relationship to Other MIB Modules
4.3.1 ENTITY-MIB and ENTITY-STATE-MIB
4.4 Organization of This MIB Module
4.4.1 The dcomPowerSupplyStatusTable
4.4.2 Event Notifications
4.4.2.1 dcomPowerSupplyEventUp
4.4.2.2 dcomPowerSupplyEventDown
4.5 Notes for Management Applications
5. Definitions
6. Acknowledgments
7. Security Considerations
8. References
8.1 Normative References
8.2 Informative References
9. Change Log

© 2012 Datacom Systems Inc

1. Introduction

This memo defines managed objects and notifications exposing status information about power supplies associated with Datacom products.

2. The Internet-Standard SNMP Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP).

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

4. Overview

This section provides an overview of this MIB module.

Section 4.1 provides a discussion on the use of SMIv2 Syntax and Textual-Conventions.

Section 4.2 discusses the relationship of this MIB module to other MIB modules.

Section 4.3 presents the organization of this MIB module.

Section 4.4 provides suggestions for management applications using this MIB module to monitor the status of power supplies associated with Datacom products.

4.1 Use of SMIv2 Syntax and Textual-Conventions

This section discusses the SMIv2 syntax and Textual-Conventions (TC) used for the syntax of SNMP managed objects defined within this MIB module.

4.1.1 SMIv2 Syntax

This section discusses the syntax types defined in the 'Structure of Management Information Version 2 (SMIv2)' [RFC2578] and used in this MIB module.

© 2012 Datacom Systems Inc

4.1.1.1 Unsigned32

There is one object defined in this MIB module using the SMIv2 Unsigned32 syntax type.

An instance of an object definition using the Unsigned32 syntax type can represent an integer value between 0 and 2^32-1 inclusive (0 to 4,294,967,295 decimal).

The object definition using the Unsigned32 syntax type follows:

in the dcomPowerSupplyStatusTable - dcomPowerSupplyIndex

The dcomPowerSupplyIndex object defines the SNMP index component associated with a power supply.

4.1.1.2 INTEGER

There is one object defined in this MIB module using the SMIv2 INTEGER syntax type.

An instance of an object definition using the INTEGER syntax type is used to represent an integer value as a named-number enumeration. Only named-numbers defined in the enumeration may be present as a
values.

The object definition using the INTEGER syntax type follows:

in the dcomPowerSupplyStatusTable - dcomPowerSupplyStatus

The dcomPowerSupplyStatus object defines the current state of a power supply. The named-number enumerated values are as follow:

stateUnknown(1) - the current state is 'unknown'
stateDown(2) - the current state is 'down'
stateUp(3) - the current state is 'up'

4.2 SNMPv2-TC Textual Conventions

This section discusses Textual Conventions defined in the SNMPv2-TC [RFC2579] and used in this MIB module.

4.2.1 TimeStamp

There is one object defined in this MIB module using the SMIv2 TimeStamp TC.

An object using the SMIv2 TimeStamp TC exposes a notion of local time relative to a local time source. In the SNMP, the sysUpTime [RFC3418] object provides this local time source.

The value of an instance of an object using the TimeStamp TC changes when a specific event occurs, as described in its description clause.

© 2012 Datacom Systems Inc

The SNMP managed objects using a TimeStamp TC follow:

in the dcomPowerSupplyStatusTable - dcomPowerSupplyLastChange

A change in the value of a dcomPowerSupplyLastChange instance indicates the time at which a power supply transitioned into its current state.

A value of zero(0) indicates that a power supply was already in its current state when the SNMP agent last re-initialized.

4.3 Relationship to Other MIB Modules

This section discusses the relationship of this MIB module to MIB modules published by the Internet Engineering Task Force (IETF).

4.3.1 ENTITY-MIB and ENTITY-STATE-MIB

The ENTITY-MIB and ENTITY-STATE-MIB are designed to expose management information about the full inventory of components associated with a managed system. These components include power supplies.

In contrast, this MIB module addresses the specific requirement for exposing management information about just the power supplies associated with Datacom products. Other than power supplies, no management information is exposed for components comprising Datacom products.

An SNMP agent that implements both the ENTITY-MIB and the ENTITY-STATE-MIB is capable of exposing the same management information about power supplies as exposed by this MIB module.

However, within the Internet community, the usual expectations for an implementation of the ENTITY-MIB and ENTITY-STATE-MIB is for fully populated tables containing management information about the complete inventory of components associated with a managed system.

Thus, this MIB module is used to expose management information relevant to power supplies associated with Datacom products.

Note, that the use of this MIB module does not preclude the potential for future use of the ENTITY-MIB and ENTITY-STATE-MIB for Datacom products.

4.4 Organization of This MIB Module

This MIB module organizes its object definitions into one conceptual table. This table is discussed in the following section.

There are also two notification definitions contained in this MIB module. These notifications are discussed in a subsequent section.

© 2012 Datacom Systems Inc

4.4.1 The dcomPowerSupplyStatusTable

This table contains object definitions providing essential statistics for power supplies associated with the managed system.

An entry exists in this table for each power supply associated with the managed system.

A unique value for the dcomPowerSupplyIndex object identifies each power supply.

The value of the dcomPowerSupplyStatus object indicates the current state of a power supply. A value of 'stateDown(2)' indicates the power suppply is not operating or is not plugged in. A value of 'stateUp(3)' indicates the power supply is operating as intended.

A dcomPowerSupplyStatus value of 'stateUnknown(1)' indicates the current state of the power supply is unknown. This value is defined for architectural purposes and is unlikely to be observed in deployed systems.

The value of the dcomPowerSupplyLastChange object provides a TimeStamp indication of when a power supply entered its current state. The special value of zero(0) indicates a power supply was already in its current state when the SNMP agent last re-initialized.

4.4.2 Event Notifications

This MIB module defines two event notifications for reporting state transitions associated with power supplies. These notifications are discussed in the following sections.

4.4.2.1 dcomPowerSupplyEventUp

A dcomPowerSupplyEventUp event notification provides an indication that a power supply has transitioned into the 'up' state.

The power supply involved in this event is identified by the dcomPowerSupplyIndex value appended to the object name of the dcomPowerSupplyStatus variable binding.

4.4.2.2 dcomPowerSupplyEventDown

A dcomPowerSupplyEventUp event notification provides an indication that a power supply has transitioned into the 'down' state.

The power supply involved in this event is identified by the dcomPowerSupplyIndex value appended to the object name of the dcomPowerSupplyStatus variable binding.

4.5 Notes for Management Applications

- when the SNMP agent re-initializes, subsequent to receiving the coldStart event notification, a management application will receive a dcomPowerSupplyEventDown event notification for any

© 2012 Datacom Systems Inc

power supply currently in the 'down' state.

- when a dcomPowerSupplyEventDown event notification is received, a management application SHOULD determine why the power supply is not functioning. If it is determined that the power supply has failed, then make arrangements to order and install an appropriate Datacom replacement unit for the failed power supply. If it is determined that the power supply is unplugged or otherwise disconnected from its electrical source, then make arrangements to re-plug and reconnect the power supply.

- when a dcomPowerSupplyEventUp event notification is received, a management application SHOULD determine which previously received dcomPowerSupplyEventDown event this dcomPowerSupplyEventUp event notification resolves.

5. Definitions

```
DATACOM-POWER-SUPPLY-MIB DEFINITIONS ::= BEGIN

IMPORTS
    MODULE-IDENTITY, OBJECT-IDENTITY,
    OBJECT-TYPE, NOTIFICATION-TYPE,
    Unsigned32
                FROM SNMPv2-SMI
    TimeStamp
                FROM SNMPv2-TC
    MODULE-COMPLIANCE, OBJECT-GROUP,
    NOTIFICATION-GROUP
                FROM SNMPv2-CONF
    datacomMibs
                FROM DATACOM-SMI-MIB;

datacomPowerSupplyMib MODULE-IDENTITY
    LAST-UPDATED "201007150000Z"      -- 15 July 2010, midnight
    ORGANIZATION "Datacom Systems Inc."
    CONTACT-INFO
          "Datacom Systems Inc.
           9 Adler Drive
           East Syracuse, NY 13057
           USA

           Telephone:  +1 315 463 1585
            URL:       http://www.datacomsystems.com

          "
    DESCRIPTION
          "This MIB modules defines managed objects and
          notifications exposing status information about
```

```
        power supplies associated with Datacom products.

        Copyright (C) 2010 Datacom Systems Inc. All rights
        reserved. Use is subject to license terms.

        This version of the DATACOM-POWER-SUPPLY-MIB module
        is part of Datacom publication, `The Datacom Power
        Supply MIB', July 2010. See the publication itself
        for full legal notices.
        "

    -- Revision log
      REVISION      "201007150000Z"      -- 15 July 2010, midnight
      DESCRIPTION
        "Initial version, as part of Datacom publication
        'The Datacom Power Supply MIB', July 2010.
        "
      ::= { datacomMibs 4 }

dcomPowerSupplyObjects OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
      "This subtree contains OBJECT-TYPE definitions exposing
      status information for power supplies associated with
      Datacom products.
      "
    ::= { datacomPowerSupplyMib 1 }

dcomPowerSupplyEvents OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
      "This subtree contains NOTIFICATION-TYPE definitions
      for asynchronous reporting of events about power
      supplies associated with Datacom products.
      "
    ::= { datacomPowerSupplyMib 2 }

dcomPowerSupplyConformance OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
      "This subtree contains conformance statements for this
      MIB module.
      "
    ::= { datacomPowerSupplyMib 3 }

--
```

```
-- assignments under dcomPowerSupplyEvents
--

dcomPowerSupplyEventsNotify OBJECT-IDENTITY
   STATUS      current
   DESCRIPTION
      "The required SNMP notification prefix.
      "
   ::= { dcomPowerSupplyEvents 0 }

--
-- assignments under dcomPowerSupplyConformance
--

dcomPowerSupplyCompliances OBJECT-IDENTITY
   STATUS      current
   DESCRIPTION
      "This subtree contains compliance statements for this
      MIB module.
      "
   ::= { dcomPowerSupplyConformance 1 }

dcomPowerSupplyGroups OBJECT-IDENTITY
   STATUS      current
   DESCRIPTION
      "This subtree contains OBJECT-GROUP and
      NOTIFICATION-GROUP definitions for this MIB module.
      "
   ::= { dcomPowerSupplyConformance 2 }

--
-- power supply status table
--

dcomPowerSupplyStatusTable OBJECT-TYPE
   SYNTAX      SEQUENCE OF DcomPowerSupplyStatusEntry
   MAX-ACCESS not-accessible
   STATUS      current
   DESCRIPTION
      "A table of status information for power supplies
      associated with a Datacom product.
      "
   ::= { dcomPowerSupplyObjects 1 }

dcomPowerSupplyStatusEntry OBJECT-TYPE
   SYNTAX      DcomPowerSupplyStatusEntry
```

© 2012 Datacom Systems Inc

```
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "Status information for a power supply associated with
        a Datacom product.
        "
    INDEX   { dcomPowerSupplyIndex }
    ::= { dcomPowerSupplyStatusTable 1 }

    DcomPowerSupplyStatusEntry ::= SEQUENCE {
        dcomPowerSupplyIndex        Unsigned32,
        dcomPowerSupplyStatus       INTEGER,
        dcomPowerSupplyLastChange   TimeStamp
    }

dcomPowerSupplyIndex OBJECT-TYPE
    SYNTAX      Unsigned32 (1..2147483647)
    MAX-ACCESS not-accessible
    STATUS      current
    DESCRIPTION
        "The index for this power supply.
        "
    ::= { dcomPowerSupplyStatusEntry 1 }

dcomPowerSupplyStatus OBJECT-TYPE
    SYNTAX      INTEGER {
                    stateUnknown(1),
                    stateDown(2),
                    stateUp(3)
                }
    MAX-ACCESS read-only
    STATUS      current
    DESCRIPTION
        "The current state for this power supply.

        The named-number enumerated values are as follow:

            stateUnknown(1) - the current state is 'unknown'
            stateDown(2)    - the current state is 'down'
            stateUp(3)      - the current state is 'up'
        "
    ::= { dcomPowerSupplyStatusEntry 2 }

 dcomPowerSupplyLastChange OBJECT-TYPE
    SYNTAX      TimeStamp
    MAX-ACCESS read-only
```

© 2012 Datacom Systems Inc

```
    STATUS      current
    DESCRIPTION
        "The value of sysUptime when this power supply
        transitioned into its current state.

        A value of zero(0) indicates this power supply was
        already in its current state when the SNMP agent last
        re-initialized.
        "
    ::= { dcomPowerSupplyStatusEntry 3 }

--
-- power supply event notifications
--

dcomPowerSupplyEventUp NOTIFICATION-TYPE
      OBJECTS { dcomPowerSupplyStatus
              }
      STATUS      current
      DESCRIPTION
          "A dcomPowerSupplyEventUp event notification
          provides an indication that a power supply has
          transitioned into the 'up' state.

          The power supply involved in this event is
          identified by the dcomPowerSupplyIndex value
          appended to the object name of the
          dcomPowerSupplyStatus variable binding.
          "
    ::= { dcomPowerSupplyEventsNotify 1 }

 dcomPowerSupplyEventDown NOTIFICATION-TYPE
      OBJECTS { dcomPowerSupplyStatus
              }
      STATUS      current
      DESCRIPTION
          "A dcomPowerSupplyEventDown event notification
          provides an indication that a power supply has
          transitioned into the 'down' state.

          The power supply involved in this event is
          identified by the dcomPowerSupplyIndex value
          appended to the object name of the
          dcomPowerSupplyStatus variable binding.
          "
    ::= { dcomPowerSupplyEventsNotify 2 }
```

© 2012 Datacom Systems Inc

```
--
-- conformance and compliance statements
--

dcomPowerSupplyCompliance MODULE-COMPLIANCE
   STATUS current
   DESCRIPTION
      "The compliance statement for systems supporting
      the Datacom Power Supply MIB."
   MODULE -- this module
      MANDATORY-GROUPS {
         dcomPowerSupplyStatusGroup ,
         dcomPowerSupplyEventGroup
      }
   ::= { dcomPowerSupplyCompliances 1 }

--
-- units of conformance
--

dcomPowerSupplyStatusGroup OBJECT-GROUP
   OBJECTS {
         dcomPowerSupplyStatus,
         dcomPowerSupplyLastChange
         }
   STATUS    current
   DESCRIPTION
      "A collection of managed objects exposing status
      information for power supplies associated with Datacom
      products."
   ::= { dcomPowerSupplyGroups 1}

dcomPowerSupplyEventGroup NOTIFICATION-GROUP
   NOTIFICATIONS {
         dcomPowerSupplyEventUp,
         dcomPowerSupplyEventDown
         }
   STATUS    current
   DESCRIPTION
      "A collection of event notifications for reporting
      state transitions for power supplies associated with
      Datacom products."
   ::= { dcomPowerSupplyGroups 2}

END
```

© 2012 Datacom Systems Inc

6. Acknowledgments

The production and maintenance of this memo is a group effort of the Datacom development team.

7. Security Considerations

There are no management objects defined in this MIB module that have a MAX-ACCESS clause of read-write and/or read-create. So, if this MIB module is implemented correctly, then there is no risk that an intruder can alter or create any management objects of this MIB module via direct SNMP SET operations.

None of the readable objects in this MIB module (i.e., objects with a MAX-ACCESS other than not-accessible) are considered sensitive or vulnerable within network environments.

SNMP versions prior to SNMPv3 did not include adequate security. Even if the network itself is secure (for example by using IPsec), even then, there is no control as to who on the secure network is allowed to access and GET/SET (read/change/create/delete) the objects in this MIB module.

It is RECOMMENDED that implementers consider the security features as provided by the SNMPv3 framework (see [RFC3410], section 8), including full support for the SNMPv3 cryptographic mechanisms (for authentication and privacy).

Further, deployment of SNMP versions prior to SNMPv3 is NOT RECOMMENDED. Instead, it is RECOMMENDED to deploy SNMPv3 and to enable cryptographic security. It is then a customer/operator responsibility to ensure that the SNMP entity giving access to an instance of this MIB module is properly configured to give access to the objects only to those principals (users) that have legitimate rights to indeed GET or SET (change/create/delete) them.

8. References

8.1 Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

© 2012 Datacom Systems Inc

[DSI-SMI] Datacom Systems, Inc., 'The Datacom Structure of Management Information (SMI), July 2010.

8.2 Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Network Management Framework", RFC 3410, December, 2002.

9. Change Log

Changes introduced in revision "201007015000Z", 15 July 2010 - initial version

© 2012 Datacom Systems Inc

11 Appendix C - Structure of Management Information MIB

The Datacom Structure of Management Information (SMI) MIB

This Appendix specifies a proprietary MIB module of Datacom Systems Inc.

Distribution of this memo is limited to Datacom product licensees and other interested parties having express written consent from Datacom Systems Inc.

MIB documentation may be requested by contacting us at: http://www.datacomsystems.com.

Copyright Notice

Copyright (C) 2010 Datacom Systems Inc. All Rights Reserved; use is subject to license terms.

Abstract

This memo defines a portion of the Management Information Base (MIB) for use with network management protocols in The Internet community.

In particular, it defines the top level structure of management information and administrative registrations within the Datacom private enterprise namespace.

Table of Contents

1. Introduction
2. The Internet-Standard SNMP Management Framework
3. Conventions
4. The Datacom Structure of Management Information
5. Definitions
6. Acknowledgments
7. Security Considerations
8. References
8.1 Normative References
8.2 Informative References
9. Change Log

1. Introduction

This memo defines the top level structure of management information

and administrative registrations within the Datacom private enterprise namespace.

2. The Internet-Standard SNMP Management Framework

For a detailed overview of the documents that describe the current Internet-Standard Management Framework, please refer to section 7 of RFC 3410 [RFC3410].

Managed objects are accessed via a virtual information store, termed the Management Information Base or MIB. MIB objects are generally accessed through the Simple Network Management Protocol (SNMP).

Objects in the MIB are defined using the mechanisms defined in the Structure of Management Information (SMI). This memo specifies a MIB module that is compliant to the SMIv2, which is described in STD 58, RFC 2578 [RFC2578], STD 58, RFC 2579 [RFC2579] and STD 58, RFC 2580 [RFC2580].

3. Conventions

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

4. The Datacom Structure of Management Information

Datacom enterprise MIB modules are consistent with and extend as appropriate, management objects defined within IETF standards track MIB modules.

The Internet Assigned Numbers Authority (IANA) has assigned Datacom the private enterprise number 9762. An up-to-date list of private enterprise number assignments is maintained by IANA at http://www.iana.org/assignments/enterprise-numbers.

The organization of the datacom(9762) subtree follows:

agentIdents(1)
The agentIdents subtree provides an area for OBJECT-IDENTITY definitions used for the identification of Datacom SNMP agents.

Definitions occur within the DATACOM-AGENT-CAPS MIB

© 2012 Datacom Systems Inc

module.

agentCaps(2)
The agentCaps subtree provides an area AGENT-CAPABILITIES statements used to indicate the capabilities of Datacom SNMP agents.

Definitions occur within the DATACOM-AGENT-CAPS MIB module.

datacomMibs(3)
The datacomMibs subtree provides an area for MODULE-IDENTITY definitions with Datacom MIB modules.

MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE, MODULE-COMPLIANCE, OBJECT-GROUP and NOTIFICATION-GROUP definitions occur within the respective Datacom MIB module.

Additions and deprecations to assignments within the top level of the Datacom private enterprise name space may occur from time to time as documented in revisions to this memo.

5. Definitions

```
DATACOM-SMI-MIB DEFINITIONS ::= BEGIN

IMPORTS
   MODULE-IDENTITY, OBJECT-IDENTITY, enterprises
          FROM SNMPv2-SMI;        -- [RFC2578]

datacomSmiMib MODULE-IDENTITY
  LAST-UPDATED "201007010000Z"     -- 1 July 2010, midnight
  ORGANIZATION "Datacom Systems Inc."
  CONTACT-INFO
    "Datacom Systems Inc.
     9 Adler Drive
     East Syracuse, NY 13057
     USA

     Telephone:  +1 315 463 1585
     URL:        http://www.datacomsystems.com

    "
  DESCRIPTION
    "The top level organization of the Datacom private
    enterprise name space.
```

© 2012 Datacom Systems Inc

```
        Copyright (C) 2010 Datacom Systems Inc. All rights
        reserved. Use is subject to license terms.

        This version of the DATACOM-SMI-MIB module is part of
        Datacom publication, `The Datacom SMI MIB', July 2010.
        See the publication itself for full legal notices.
        "

    -- Revision log
      REVISION      "201007010000Z"      -- 1 July 2010, midnight
      DESCRIPTION
        "Initial version, as part of Datacom publication
        `The Datacom SMI MIB', July 2010.
        "
      ::= { datacomMibs 1 }

datacom OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "The private enterprise number assigned to Datacom by
        the Internet Assigned Numbers Authority (IANA).
        "
    ::= { enterprises 9762 }

agentIdents OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "The agentIdents subtree provides an area for OID
        assignments used to identify Datacom managed systems.

        Datacom agent identity values are exposed by the
        sysObjectID object.

        Definitions occur within the DATACOM-AGENT-CAPS MIB
        module.
        "
    ::= { datacom 1 }

agentCaps OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "The agentCaps subtree provides an area for OID
        assignments as used in Datacom AGENT-CAPABILITIES
        macros.
```

```
        Definitions occur within the DATACOM-AGENT-CAPS MIB
        module.
        "
    ::= { datacom 2 }


datacomMibs OBJECT-IDENTITY
    STATUS      current
    DESCRIPTION
        "The datacomMibs subtree contains assignments as used
        in MODULE-IDENTITY macros in Datacom MIB modules.

          MODULE-IDENTITY, OBJECT-TYPE, NOTIFICATION-TYPE,
          MODULE-COMPLIANCE, OBJECT-GROUP and NOTIFICATION-GROUP
          definitions occur within the respective Datacom MIB
          module.
          "
      ::= { datacom 3 }

--  The following list tracks assignments known as of this
--  revision of the DATACOM-SMI-MIB.
--
--  datacomSmiMib               {  datacomMibs  1  }
--    <reserved>              {  datacomMibs  2  }
--  datacomAgentCapsMib         {  datacomMibs  3  }
--  datacomPowerSupplyMib       (  datacomMibs  4  }

END
```

6. Acknowledgments

The production and maintenance of this memo is a group effort of the Datacom development team.

7. Security Considerations

This module does not define any management objects. Instead, it defines the top level assignments within the Datacom enterprise name space.

Meaningful security considerations can only be written in MIB modules that define management objects. Therefore, this module does not present any known security concerns.

8. References

© 2012 Datacom Systems Inc

8.1 Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, March 1997.

[RFC2578] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Structure of Management Information Version 2 (SMIv2)", STD 58, RFC 2578, April 1999.

[RFC2579] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Textual Conventions for SMIv2", STD 58, RFC 2579, April 1999.

[RFC2580] McCloghrie, K., Perkins, D., Schoenwaelder, J., Case, J., Rose, M., and S. Waldbusser, "Conformance Statements for SMIv2", STD 58, RFC 2580, April 1999.

8.2 Informative References

[RFC3410] Case, J., Mundy, R., Partain, D., and B. Stewart, "Introduction and Applicability Statements for Internet-Standard Network Management Framework", RFC 3410, December, 2002.

9. Change Log

Changes introduced in revision "201007010000Z", 1 July 2010
- initial version

© 2012 Datacom Systems Inc

12 Appendix D - FLASHutils

A small utility to update firmware from a binary file.

1. Insert the CD into your CD ROM drive. The installation will start automatically. (If 'autostart' is turned off on your computer, you will need to open the CD on your computer, double-click on 'setup.exe.'

2. Follow the prompts to install the software. When finished, under Start>All Programs>Datacom Systems open FLASHutils. A window will display, select the Product Selection from the drop down list, browse to find the binary file (i.e., C:\Program Files\DSI\, input the IP address of the product and click the Program box to begin.

3. Provide Login information, Username: Administrator (default), Password: admin (default), click the Login box to continue.

4. Programming Status window opens to display the programming operation. Erasing the micro should begin within 30 seconds, followed by
Updating MicroProcessor. The firmware update will take three to four minutes. CAUTION: Do not interrupt the programming process, otherwise you may be unable to access the unit.

5. When the firmware update is complete the product will automatically reboot.

© 2012 Datacom Systems Inc

Datacom Systems Inc.
9 Adler Drive • East Syracuse, NY 13057
TEL: (315) 463-9541 • FAX: (315) 463-9557
http://www.datacomsystems.com

Datacom Systems Inc

Access Your Network™